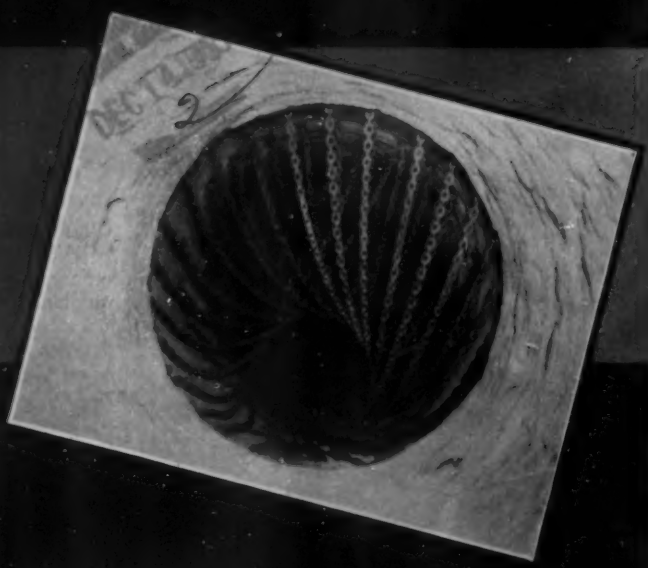
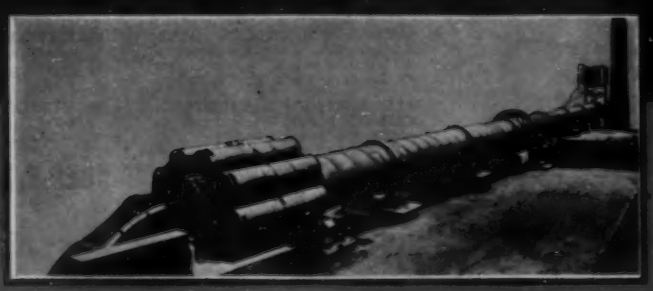
ROCK PRODUCTS

3 WAYS TO SAVE FUEL





A
Heat Exchangers for Dry Kilns

B
Chain Systems for Wet Kilns

C
Unax Cooler Integral with Rotary Kiln

F. L. SMIDTH & CO.

60 EAST 42ND STREET — ENGINEERS AND MACHINERY MANUFACTURERS — NEW YORK, N. Y.

SPEED

MODERN BY-WORD FOR AMERICAN INDUSTRY.....

Open view of the Williams "Slugger" Crusher showing heavy duty hammers, liners and discs.

ONE OPERATION DOES THE JOB

SPEED plus satisfactory work is essential in America today. Along these lines the Williams "Slugger" Crusher and Pulverizer now makes it possible to crush large pieces of stone weighing from 75 to 100 pounds to 1¼", ¾" or agricultural limestone in One Operation. This not only eliminates costly sledging but also does away with the unnecessary expense of a primary crusher.

The "Slugger" represents the most advanced type of crushing equipment on the market today, and with seven sizes to choose from, producing from 4 to 30 tons per hour, every producer whether large or small can now afford to install a Williams.

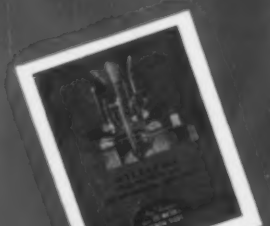
Outstanding "Slugger" Features

- **MANGANESE STEEL HAMMERS.** Heavy Duty Slug end Hammers are standard equipment in the "Slugger."
- **HAMMER ADJUSTMENTS OVERCOME WEAR.** Discs are arranged so that the hammers can be set out as they wear on the end.
- **MANGANESE STEEL ADJUSTABLE BREAKER PLATE.** Adjustable towards the hammers.
- **ELECTRIC STEEL FRONT END.** The part which holds the breaker plate is electric steel casting—3½ times stronger than cast iron.
- **COVER LINERS 1" THICK.** Manganese steel liners.
- **SIDE LINERS 1" THICK.** Manganese steel liners.
- **SEVEN SIZES.** 30 to 150 horse power, stationary or portable models.

THE WILLIAMS PATENT CRUSHER & PULVERIZER CO.

800 ST. LOUIS AVE. ST. LOUIS, MO.

WILLIAMS FINE GRINDING EQUIPMENT WITH AIR SEPARATION



For finer, more efficient fine grinding of limestone, lime, coal, talc, etc., there is a Williams Roller Mill with Air Separator to fit your requirements. Fineneses from 120 to 400 mesh.

Williams also builds Impact Mills with Air Separation; Mechanical Air Separators for classifying finely ground material or taking the fines out of dry material.

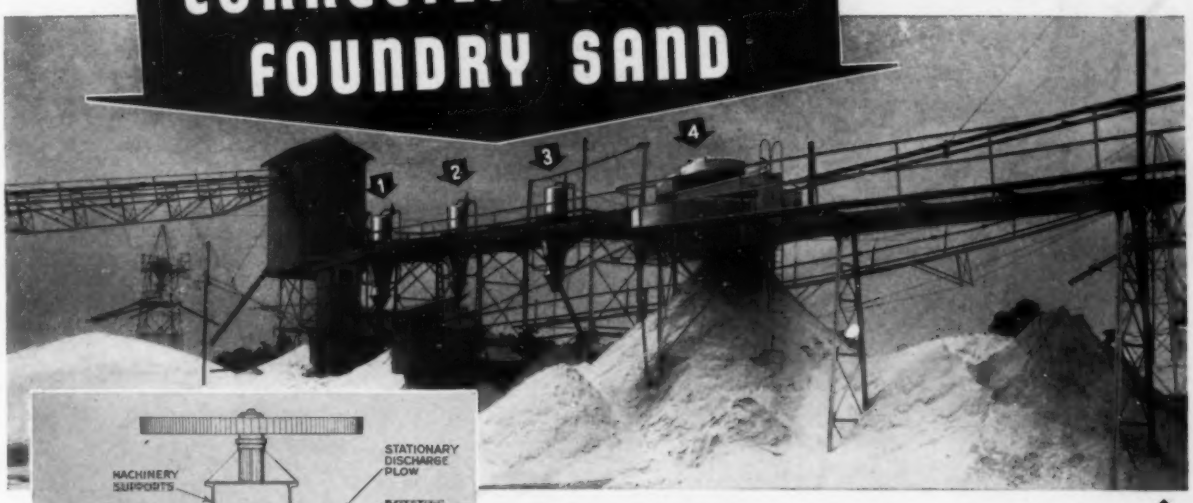
★

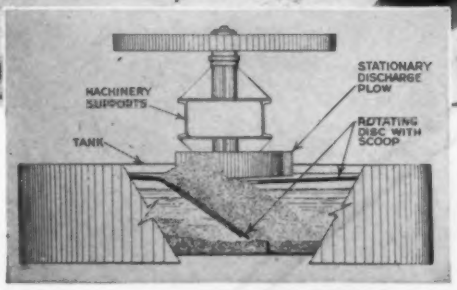
OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD

WILLIAMS

PATENT CRUSHERS GRINDERS SHREDDERS

CORRECTLY GRADED FOUNDRY SAND





Produced by LINK-BELT CLASSIFIERS

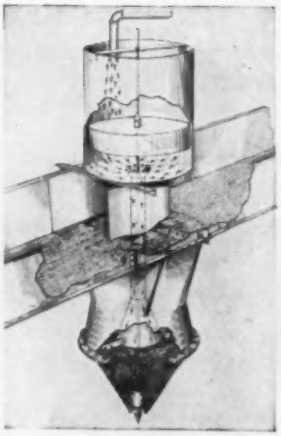
THE ROTOSCOOP

is an unusually efficient, highly flexible, self-contained, compact dewatering unit for all types of sand. It provides a simple method of recovering special grain sizes usually lost in the overflow water. Delivers sand dry enough for loading on trucks or conveyors. Made in four sizes—15′, 12′, 9′ and 6′ diameters, with capacities 20 to 150 tons per hour.

Whitehead Bros. Co's No. 1 sand and gravel plant at Dividing Creek, N. J., illustrated above, is an outstanding example of modern equipment doing a vital wartime job with precision and economy. This plant is capable of producing seven grades of sand to A.F.A. standards with three Link-Belt Shaw classifiers and a Link-Belt Rotoscoop. The 30-inch classifier (1 in illustration) can be adjusted to produce three grades, the 24-inch classifiers (2 and 3), and the 12-ft. Rotoscoop (4), produce one grade each, while the overflow from the Rotoscoop, held in a settling basin, recovers a very fine grade.

Their Number Two plant uses two Link-Belt conical screens for scalping over-14-mesh material. In the two drying plants, Link-Belt vibrating screens receive sand discharged from the dryers and operate as stationary or vibrating screens.

THE SHAW CLASSIFIER



This unit will not only produce clean commercial sand but will also make such special grades as asphalt, filter, engine, gypsum and glass sands. Sand graded and cleaned by this unit will meet the most exacting specifications, particularly where removal of fines is important.

LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Toronto 8. Offices, warehouses and distributors in principal cities.

8341

LINK-BELT

SAND AND GRAVEL HANDLING AND PREPARATION EQUIPMENT

IN THIS ISSUE

NOV. 1943
VOL. 46 NO. 11

Rock Products is published monthly by Tradepress Publishing Corporation, 309 West Jackson Blvd., Chicago 6, Illinois; Horace T. Hunter, President; John R. Thompson, Vice-President and Treasurer; J. L. Frazier, Secretary. Copyrighted 1943. Entered as second-class matter, Jan. 30, 1936, at the Chicago, Ill., post office under the act of March 3, 1879.

SUBSCRIPTION INFORMATION

Subscription Price: United States and Possessions, Mexico, Cuba, Canada, $2.00; and $4.00 to foreign countries. Twenty-five cents for single copies. Indexed in the Industrial Arts Index.

Canadian Subscriptions and remittances may be sent in Canadian funds to ROCK PRODUCTS, P. O. Box 100, Terminal "A," Toronto, Canada.

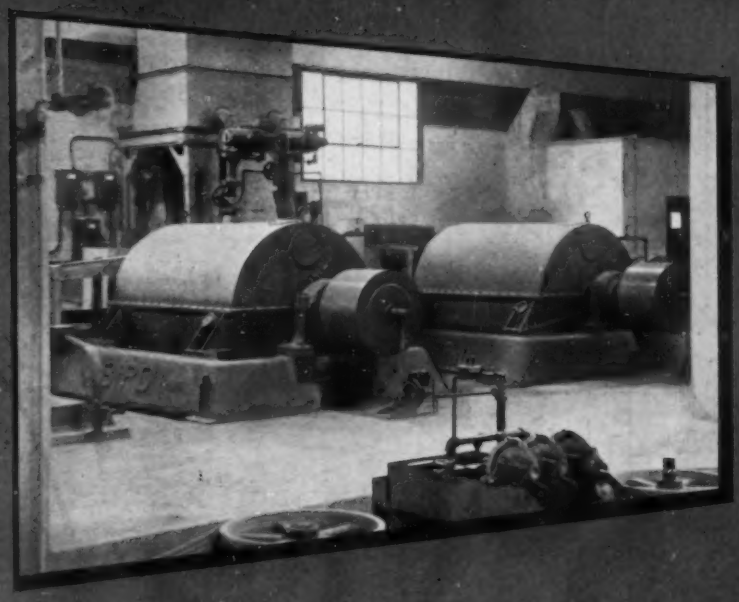
To Subscribers—Date on wrapper indicates issue with which your subscription expires. In writing to have address changed, give old as well as new address.

Charles Hoefer, Jr., Manager; **L. V. Rodda**, Circulation Manager; **C. P. Teats**, Field Representative; **C. M. Hancock**, production manager.

DISTRICT ADVERTISING MANAGERS

NEW YORK — W. A. Buschman, 522 Fifth Avenue, Postal Zone 18. Tel. Murray Hill 2-7888. **CLEVELAND**—T. O. Steadman, Hanna Building. Tel. Main 4362. **CHICAGO**—Louis C. Thaon, 309 W. Jackson Blvd., Postal Zone 6, Tel. Harrison 7890. **SAN FRANCISCO REPRESENTATIVE**—Duncan Scott & Co., Mills Building, Postal Zone 4. Tel. Sutter 1393. **LOS ANGELES REPRESENTATIVE**—Duncan Scott & Co., Western Pacific Building, Postal Zone 15. Tel. Prospect 5319. **LONDON OFFICE**—Quadrant House, 55, 58 Pall Mall.

These BIRD Centrifugal CLASSIFIERS



At UNIVERSAL ATLAS' Northampton Plant

have been operating successfully without adjustment or maintenance from the moment this modern cement plant started on its important production schedule. Employed in the Breerwood flotation plant the Bird Classifiers deliver the fine fraction for flotation, the coarse fraction going direct to storage. Feed slurry contains about 35% solids and approximately 50% feed solids are removed as a clean 15 micron fraction.

Each Classifier requires less than 140 sq. ft. of floor area. Power demand is only 50 H. P.

Because the Bird Classifiers retain only a very small quantity of slurry (approximately 125 gallons) at any given instant the operation has been freed of the difficulties usually encountered when classifying in the older type of equipment. Since forces greater than 500 x gravity can be developed the Bird Classifiers are able to handle slurries high in solids content and produce remarkably clean products.

Ask us what the Bird Centrifugal Classifier can do for you. Write

SEE YOU AT SPACE No. 206
Exposition of Chemical Industries
Madison Square Garden

BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

BUILDERS OF BIRD CONTINUOUS CENTRIFUGAL FILTERS

Help Wanted?

. . . to Help Lick

UNEXPECTED BREAKDOWNS?

How many of your key machines were built for 24-hour-day service?

. . . to Help Lick

LOW-GRADE DEPOSITS?

Has increased wartime demand brought new processing problems?

. . . to Help Lick

LAGGING SCHEDULES?

Maybe you have a bottle-neck—an added machine would load up all units.

WHATEVER HELP YOU WANT — CALL ON ALLIS

FRANKLY, MR. OPERATOR, we don't claim to know everything about your business. But the fact is that our Cooperative Engineering Service is helping hard-pressed operators like yourself straighten out a lot of tough kinks.

There's a reason for this: Because Allis-Chalmers builds *all types* of basic processing equipment... our engineers are *complete line* engineers—trained to look at your problem from the standpoint of *every* machine in your production cycle.

It's their job to know ways to help you make *existing* equipment work together more efficiently ...give you better "machine teamwork."

And if you need equipment, A-C engineers don't

Only Allis-Chalmers Makes a Complete Line of this Equipment!

Jaw Crushers	Gyratory Crushers	Crushing Rolls	Pulverators
			
All-steel primary and fine reduction. 1/4"-12" product.	High-speed primary and secondary. 3" to 60" size feed.	6 different types. Reduction ratios from 5-1 to 10-1.	"Multi-impact" reduces non-abrasives to cubical shape.

YOU CAN LEAN ON ALLIS-CHALMERS COOPERATIVE ENGINEERING — *HARD* — TO HELP BEAT PRODUCTION PROBLEMS FACING EVERY PROCESSOR TODAY!

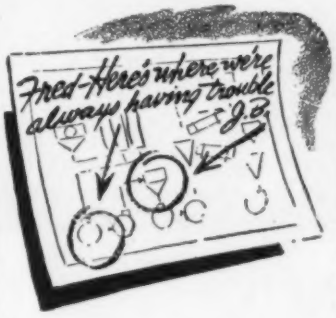
. . . to Help Lick

LABOR SHORTAGE?

Do you use any men unnecessarily? Crushing is a *machine* industry!

. . . to Help Lick

OBSOLETE MACHINERY?



Some machines that used to "get by" need too much maintenance today.

. . . to Help Lick

OVERWORKED ENGINEERS?

Outside engineering cooperation might solve many problems quickly.

-CHALMERS!

Models of processing machinery in **A-C** laboratories reproduce conditions in your plant — help eliminate guesswork!

A 1624-B

have to "push" *one* type. *What you need* dictates their recommendation . . . *not what they've got!*

For the whole story of how Allis-Chalmers Cooperative Engineering (yours at absolutely no cost) can "team-up" with your own engineers to give you greater production, call your nearby district office. Or write ALLIS-CHALMERS, MILWAUKEE 1, WIS.

Grinding Mills	*Pyro-Processing*	*Vibrating Screens*	*Motors & Drives*	*Centrifugal Pumps*
				
30 types — over 3600 in service on every material.	Kilns, coolers, dryers, roasters engineered in all types.	Efficient separation and dewatering — 8 different types.	Unbeatable team—Lo-Maintenance Motor & Texrope V-belts.	Largest line, highest efficiencies — built with motors.

Load All Bearings This Right-Angled Way

. . . and help check the decline in output-per-man-hour

ROLLWAY'S RIGHT-ANGLED BEARING LOADING

reduces down-time for service & replacement

Deterioration of equipment . . . loss of manpower . . . and cumulative labor fatigue . . . ALL are steadily reducing output per worker in war and civilian industry. Every help that can keep shifts operating at top efficiency . . . and machines running without shutdowns . . . is of utmost importance now.

- All radial loads carried at right angles to the roller axis.
- All thrust loads carried at right angles to the roller axis.

Cut Down on Shut Downs with Rollway Right-Angled Bearings

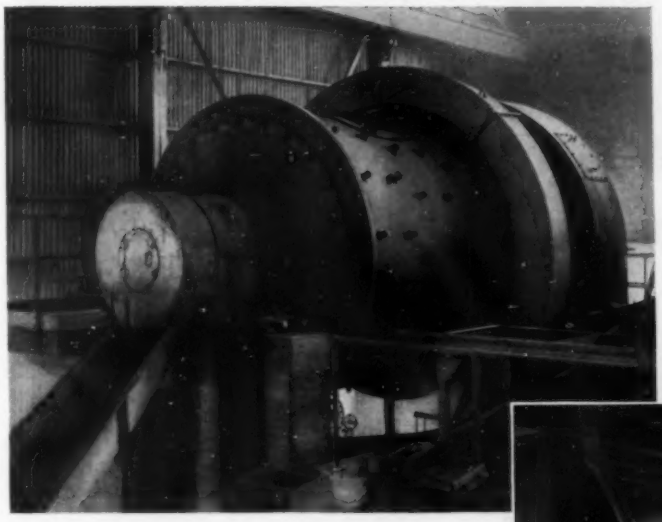
Rollway Roller Bearings wear longer . . . require less maintenance . . . and provide greater carrying capacity in given dimensions, because they *simplify* the load, *reduce* the pressures per bearing and per roller. Rollway splits every load into its two simplest components of *pure radial* and *pure thrust*. Each component is carried at *right angles* to the roller axis by *separate* bearing assemblies. No oblique loads and resultants, no thermal float or uncalculated thrust can impose secondary pressures on *any* Rollway Bearing.

Choose Your Bearings with Care

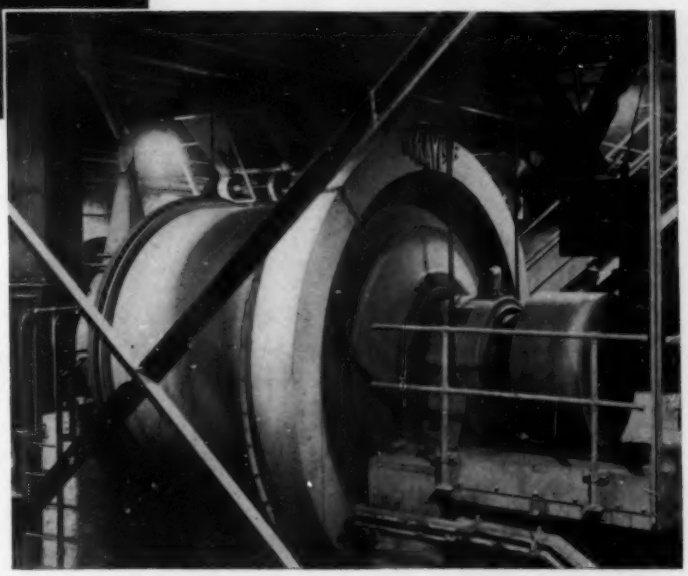
The torque and life of roller bearings are greatly affected by selection of the proper size and type. Send drawing or detailed description for free bearing analysis and recommendation. No obligation. S.A.E. or American Standard metric dimensions and tolerances available for most applications.

ROLLWAY BEARING COMPANY, INC., SYRACUSE, NEW YORK

BUILDING HEAVY-DUTY BEARINGS SINCE 1908 **BEARINGS**



TRAYLOR at UNIVERSAL ATLAS



MOST MODERN AMERICAN CEMENT PLANT

In the newest and most modern cement plant in the United States, if not in the world, that of the Universal Atlas Cement Company, at Northampton, Penna., ALL OF THE RAW GRINDING, and the PRELIMINARY FINISH GRINDING is done in SEVEN 9'-6" dia. x 8'-8" TRAYLOR BALL MILLS. That fact is significant, but not unusual, because for more than twenty years Traylor has faithfully served the cement industry in America and many foreign countries.

Our engineers have intimate knowledge of the theory and practice of cement manufacture. They are available, at all times, for consultation regarding knotty crushing and grinding problems.

WE BUILD

Rotary Kilns
Rotary Coolers
Rotary Dryers
Rotary Slakers
Scrubbers
Evaporators
Jaw Crushers
Gyratory Crushers
Reduction Crushers
Crushing Rolls
Grinding Mills
Ball Mills
Rod Mills
Tube Mills
Pug Mills
Wash Mills
Feeders
Rotary Screens
Elevators

SEE OUR BULLETIN 2103

TRAYLOR
ENGINEERING & MANUFACTURING CO.
MAIN OFFICE AND WORKS — ALLENTOWN PENNA., U.S.A.

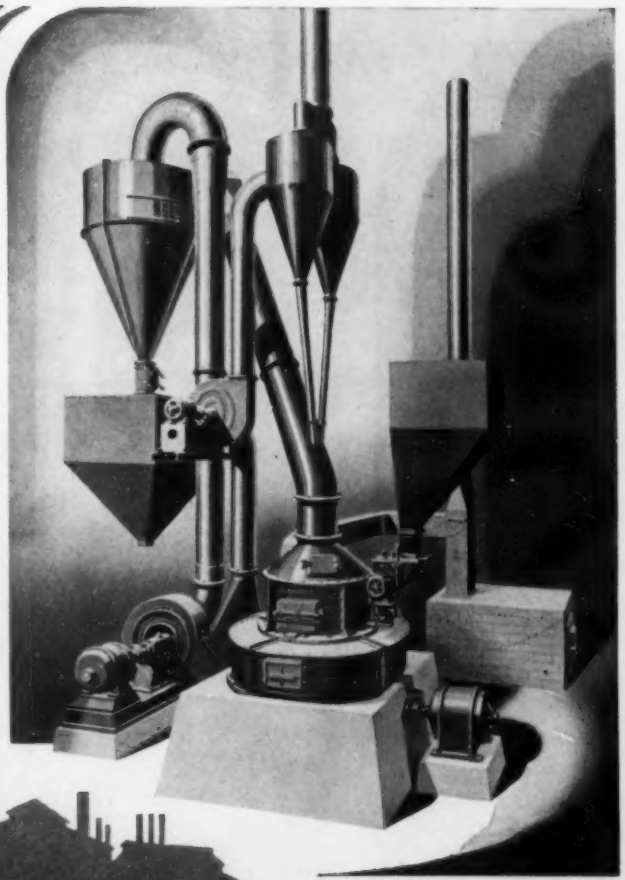
NEW YORK CITY 3416 Empire State Bldg. | CHICAGO 2051 One La Salle St. Bldg. | SALT LAKE CITY 101 West Second South St. | LOS ANGELES 919 Chester Williams Bldg. | SPOKANE S. 2707 Rhyolite Rd.

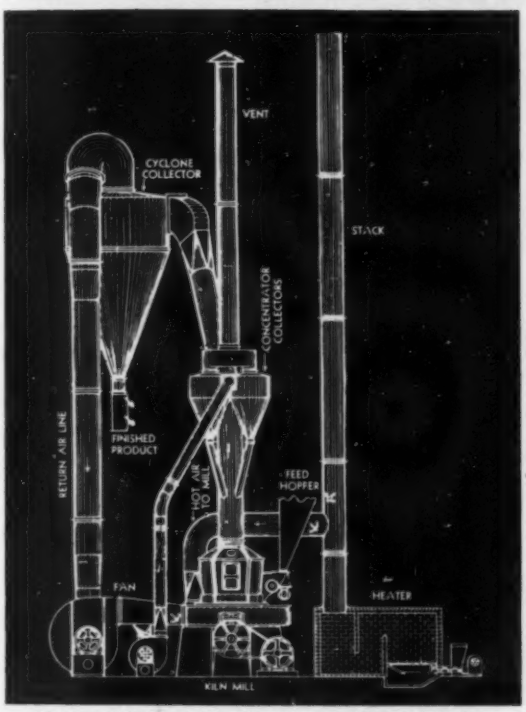
B. C. EQUIPMENT CO., LTD.
551 Howe St., Vancouver, B. C.

Export Department—104 Pearl St., New York City. Foreign Sales Agencies: London, Lima, Rio de Janeiro, Buenos Aires, Santiago, Antofagasta, Oruro, Montevideo

RAYMOND
SUPER MILLS

The Answer to Big Production





Raymond Roller Mill with air separation and drying system for drying, grinding, classifying and conveying material to storage in ONE OPERATION.

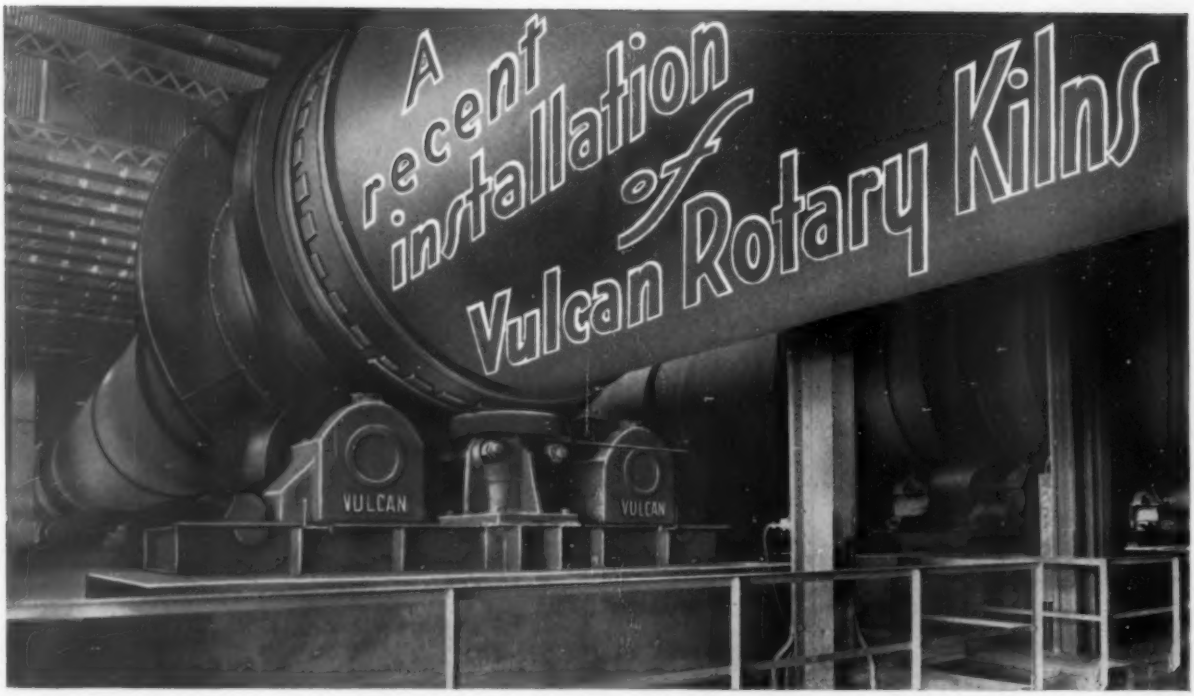
Huge capacities up to 30 tons per hour of finely powdered materials per mill are being produced with Raymond Super Roller Mills to help supply today's emergency demands for essential products.

Pulverizing 25 to 30 tons an hour of Florida phosphate rock to 50% minus 200-mesh . . . drying and grinding raw limestone at 13 tons an hour through 65-mesh with less than 1% final moisture . . . these are typical examples of Raymond Super Mill performance. High tonnages at low cost in grinding gypsum, langbeinite, clays and many other non-metallic minerals, are readily obtained in these big machines.

Raymond Roller Mills may be equipped with whizzer separators, double-cone separators or built in the Low Side type Roller Mill with standard air separation. They may be furnished with a drying system for removing surface moisture from materials while grinding.

Ask for Roller Mill Catalog

RAYMOND PULVERIZER DIVISION
COMBUSTION ENGINEERING COMPANY, INC.
1307 North Branch Street Chicago 22, Illinois
Sales Offices in Principal Cities
Canada: Combustion Engineering Corp., Ltd., Montreal



Data that's not in the books:

- ROTARY KILNS, COOLERS AND DRYERS
- ROTARY RETORTS, CALCINERS, ETC.
- FEEDERS, ELEVATORS, SCREENS, ETC.
- CRUSHING ROLLS, PULVERIZERS, AND GRINDING MILLS
- BRIQUETTING MACHINES, DOUBLE-ROLL TYPE
- IMPROVED VERTICAL LIME KILNS
- QUICK-LIME HYDRATORS
- ELECTRIC HOISTS OF MANY TYPES
- SHAKING-CHUTE AND CHAIN CONVEYORS
- CAST-STEEL SHEAVES AND GEARS
- INDUSTRIAL LOCOMOTIVES OF ALL MODERN TYPES

For nearly half a century Vulcan engineers have been designing Rotary Kilns, Coolers, Dryers, Retorts, Calciners, etc. for the rock products, chemical processing and metallurgical industries. Predominant, throughout all this long period, in the manufacture of cement and lime, Vulcan rotary cylinders and accessory equipment are widely used, also, for the nodulizing and desulphurizing of ores, dehydration of bauxite, alteration of barytes, calcination of lithopone, processing of pigments, recovery of lime from paper-mill sludge, soda ash from black liquor, coke and other by-products from oil sludge, etc.

At the present time virtually all of the highly strategic materials—aluminum, magnesium, vanadium, synthetic rubber, etc.—upon which an allied victory depends, are processed, at one or more of their production stages, by Vulcan equipment and our engineers have acquired a vast fund of important operating data which can be applied to the processing problems of any concern whose products might contribute to the allied war effort.

Write us regarding any manufacturing or processing problem within the scope of the Vulcan equipment here listed. Constructive suggestions, estimates and preliminary designs will be furnished as promptly and completely as possible, without charge or obligation of any kind.

VULCAN

NEW YORK OFFICE
50 CHURCH STREET

IRON WORKS

WILKES-BARRE • PA.

NOT ON YOUR PAYROLL

but he's behind you all the time!

The IOWA DEALER

Cedarapids

Built by IOWA

THE IOWA LINE

of Material Handling Equipment Includes

ROCK AND GRAVEL CRUSHERS
BELT CONVEYORS — STEEL BINS
BUCKET ELEVATORS
VIBRATOR AND REVOLVING SCREENS
STRAIGHT LINE ROCK AND GRAVEL PLANTS
FEEDERS — TRAPS
PORTABLE PLACER MACHINES
PORTABLE POWER CONVEYORS
PORTABLE STONE PLANTS
PORTABLE GRAVEL PLANTS
REDUCTION CRUSHERS
BATCH TYPE ASPHALT PLANTS
TRAVELING (ROAD MIX) PLANTS
DRAG SCRAPER TANKS
WASHING PLANTS
TRACTOR-CRUSHER PLANTS
STEEL TRUCKS AND TRAILERS
KUBIT IMPACT BREAKERS

THERE is a man with the answers in your territory. He's a real part of the Iowa organization. He's your Iowa Cedarapids Dealer.

Dealer organizations with all the necessary ramifications for service don't just happen. Your dealer today has taken seriously his job of helping to keep the construction industry equipped. He has met the need with investment in machinery, and increased facilities for better service, and he has done this in the face of daily increased difficulties in securing the proper help.

Your dealer is a solid citizen with a real interest in his community. He is behind you with trained personnel that understands your problems both from the standpoint of your needs in planning and purchasing, and for maintenance.

He is ready with the right parts and assistance to keep your machinery on the job. He is your friend with advance information on future contracts. He can help you apply for a new machine for war essential work, and, if you can't secure new equipment, he'll strain heaven and earth to keep your old equipment running. Count on your Iowa Dealer.

IOWA MANUFACTURING CO., CEDAR RAPIDS, IOWA

It Takes *Experience* To Make Them Tick!

Whether it's putting together the numerous intricate parts of a clock . . . or assembling the many different, complex kinds of conveying equipment that makes up an efficient material handling system . . . experience is indispensable. This is a qualification you will find in abundance at Stephens-Adamson, a leading designer and manufacturer of handling equipment for over 41 years.

That's why it will be decidedly worth your while to discuss present or post-war conveying methods with an S-A engineer. Make a date now for such a discussion—either as a step toward putting present handling operations on a more efficient basis, or getting a head start toward the solution of new problems connected with peace-time production.

STEPHENS-ADAMSON MFG. CO., 7 Ridgeway Avenue, Aurora, Illinois

STEPHEN S-A ADAMSON
MFG. CO.

Designers and Manufacturers of All Types of
BULK MATERIAL HANDLING EQUIPMENT

Million dollar coal preparation plant at the Victory Mine, Pyramid Coal Corporation near Terre Haute, Indiana, where Indiana No. 3 seam coal is mined. The conveyor from the mine slopes 18° above ground and 16° underground. The conveyor is approximately 700 ft. long of which about 500 ft. is underground. Capacity 600 tons per hour at 375 ft. per min.

Rip ¼ mile long in conveyor belt repaired with FLEXCO HD RIP PLATES *and* BELT FASTENERS

IN any type of material handling service an unforeseen accident may damage a conveyor belt and result in a costly service interruption unless the belt can be repaired without delay. In such cases Flexco HD Rip Plates and Belt Fasteners frequently save the day.

Such was the case at the Victory Mine of the Pyramid Coal Corporation where a heavy jack pipe inadvertently left in one of the mine cars ripped the 8 ply 48" conveyor belt for a distance of 1450 ft. The accompanying pictures show how the Pyramid Coal Corporation and the local Industrial Distributor restored the belt to service without a serious loss in production. The repair crew had the belt back in service within 30 hours after the accident.

If you operate conveyor belts and are not familiar with the use of Flexco HD Belt Fasteners and Rip Plates you should know about them for they may help you out of a difficult situation. We shall be pleased to send you bulletin F-100.

BULLETIN NO. F-100 gives complete information and prices on Flexco HD Belt Fasteners and Rip Plates with detailed information on how to fasten or repair conveyor belts in any thickness from ¼" and up and in any width.

Write for your copy

FLEXIBLE STEEL LACING CO.

4664 Lexington Street, Chicago 44, Illinois

★

Sole manufacturers of ALLIGATOR STEEL BELT LACING for transmission belts ● FLEXCO HD BELT FASTENERS AND RIP PLATES for conveyor belts ● ALLIGATOR V-BELT FASTENERS ● ALLIGATOR BELT CUTTERS

The illustration above shows the crew repairing a portion of the belt where the upper plies ripped and then the tear offset a few inches and the lower plies were ripped. Two rows of fasteners and rip plates were required for repairing this section of the belt. The rip was first "tacked" together every few feet with a rip plate.

The above illustration shows the fasteners and rip plates applied to a portion of the belt where the rip was clean and straight.

Flexco HD Rip Plate

Flexco HD Belt Fastener

In repairing the 48" conveyor belt 4600 Flexco HD Belt Fasteners and Rip Plates, as illustrated above, were used.

Flexco HD Belt Fasteners and Rip Plates sold by supply houses everywhere

Is your shovel handicapped by an overweight dipper?

Fast Moving PMCO **WELDED DIPPERS**

speed the daily production of shovels as much as 30%

Welded construction increases strength and saves burdensome weight. Every day more shovel engineers are increasing the productive capacity of their shovels with PMCO Welded Dippers.

Small and medium size PMCO dippers now manufactured on a production line basis

We operate the largest and most complete manganese steel foundry in the United States

PETTIBONE MULLIKEN CORPORATION

Established 1840

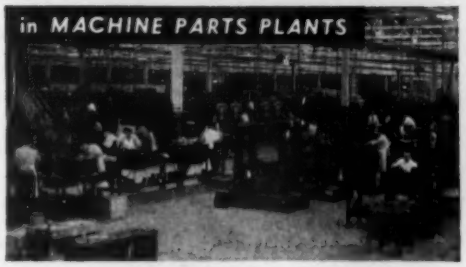
4710 West Division Street, Chicago 51, Illinois

Here Are

A Few of the Industries

in which

GATES V-BELTS *of* Synthetic Rubber



Have Been Tested and *Proved*

by *YEARS* of *SERVICE*

Five years before natural rubber supplies began to be curtailed, Gates was already supplying many industries with large quantities of V-Belts made entirely of synthetic rubber.

The synthetic rubber used was a very special one and was not used as merely a substitute for rubber. It was used because, in many applications, it is greatly superior to natural rubber. For example, under severe conditions of heat and oil, the Gates special synthetic V-belt actually outwears belts of natural rubber by as much as 230%.

This is the record *not* of just a *few* belts over a *short period* of time. It is the record of *thousands* upon *thousands* of Gates special synthetic rubber V-belts that have now been tested and proved by *years* of service in Aircraft Factories, in Ordnance Plants, in Steel Mills, in Machine Parts Plants, in Lumber Dry Kilns, in Food Processing Plants—in every kind of installation where heat and oil conditions are *excessively severe*.

The time has now come when Gates long and successful experience in the fabrication of synthetic rubber V-belts is particularly to your advantage because it can *now* be put to work for you *right in your own plant*.

You have only to look in your telephone directory and call the Gates Field Engineer. He will put at your service the full benefits of Gates knowledge and experience *without the slightest obligation*.

-and Many Others

THE GATES RUBBER COMPANY

4311

Engineering Offices and Stocks in All Large Industrial Centers

GATES VULCO ROPE DRIVES

CHICAGO, ILL. 549 West Washington
NEW YORK CITY 215-219 Fourth Avenue
ATLANTA, GA. 738 C & S National Bank Building
LOS ANGELES, CAL. 2240 East Washington Boulevard
DENVER, COLO. 999 South Broadway
DALLAS, TEXAS 2213 Griffin Street
PORTLAND, ORE. 333 N. W. 5th Avenue
SAN FRANCISCO, CAL. 1090 Bryant Street

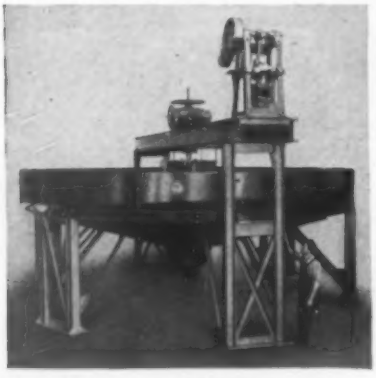
DENVER EQUIPMENT

for 24-hour Production *from* CRUSHER to FILTER

No. 30 DENVER FLOTATION CELLS are the machines built for large tonnage plants . . . they have all the mechanical and metallurgical advantages of the smaller tonnage units. The present period makes it essential to produce a high grade concentrate and still handle maximum tonnage. The Denver "Sub-A", due to the distinctive *gravity flow* method of circulation, eliminates pumps and elevators. Correct mechanical agitation and aeration account for the selective action in each cell. The *cell to cell* design permits cleaning and recleaning operations without shutdowns and insures *"24 Hour Production."*

DENVER-DILLON VIBRATING SCREENS are proving themselves in the present emergency . . . many new uses are being found for these units. If you are not already familiar with this vibrating screen, write for a copy of Bulletin No. S3-B3.

THESE DENVER SPIRAL RAKE THICKENERS are now available in the lowhead beam type design in sizes up to and including 75 feet in diameter. Patented spiral rakes move the material to center cone in one revolution. A Denver Spiral Rake Thickener will reduce your costs.



DENVER VERTICAL SAND PUMPS have long been leaders in the field of difficult pumping problems . . . the pumping of sticky flotation froth, gravity concentrates, deslimed pulps, or pulps containing gritty material . . . any material which can be made to *flow by gravity* to the feed opening can be handled by these efficient vertical pumps. Built in six sizes and described in Bulletin No. P10-B.

DENVER HYDROCLASSIFIERS are solving the most difficult fine sizing and desliming problems. Accurate separations are now being made in the 100 mesh range and finer; this fine separation requires considerable classification area as well as minimum agitation. Denver Hydroclassifiers are built with enclosed worm gear drive and convenient handwheel which easily lifts rakes. The patented spiral rakes convey material to center in one revolution. The metallurgical and mechanical advantages of this unit will fulfill the most exacting requirements where a separation of extremely fine products is desired. For flowsheet applications and complete details on this machine, write for new Bulletin No. C4A-B.

Every Plant Should Have a copy of this "Catalog of Reconditioned and New Equipment for *Immediate Shipment*". Delivery is very important today, and you can fill many of your emergency needs from this list. Before you buy any equipment, it will pay you to investigate the machines now "In Denver Stock." Write today for your copy of this Bulletin No. G4200.

USE OUR BATCH & CONTINUOUS TESTING SERVICE

DENVER EQUIPMENT 24 HOUR SERVICE COMPANY

NEW YORK CITY, NEW YORK: 50 Church St.
CHICAGO: Suite 1005, 69 W. Washington St.
SALT LAKE CITY, UTAH: 727 McIntyre Bldg.
TORONTO, ONTARIO: 45 Richmond St. W.
MEXICO, D.F.: Edificio Jalisco, Calle Ejido No. 7
MIDDLESEX, ENG.: 493A, Northolt Rd. S. Harrow
RICHMOND, AUSTRALIA: 530 Victoria Street
JOHANNESBURG, S. AFRICA: 8 Village Road

STANDARD RELIABLE 24 HOUR SERVICE EFFICIENT

DENVER EQUIPMENT COMPANY, 1400 17th St., Denver, Colorado

Enlarged reproduction free on request

Thanks For Your Part

When certain pirates started picking off what they wanted in China, Africa, Europe and the Pacific—before coming at *us*—they figured that the U.S.A. couldn't do much about it. We didn't have enough ships to handle even 30% of our *peacetime* ocean traffic! How could *we* interfere!

But in twenty months, thanks to your help, America has broken all shipbuilding records. Fighting production workers in mines, mills, forests . . . in factories producing essential parts . . . in oil fields . . . and shipyards . . . have combined to accomplish the "impossible."

Continued success now depends on *maintaining* record-breaking production. The results are *beginning* to interfere with Adolph-Tojo plans. But America must not slacken its pace in producing the materials that go into the building and the operating of our Merchant Marine—the metals, timber, coal and oil, the marine equipment, and cargo for the ships.

Now it is up to all Americans to *finish* the job . . . and *fast.*

You Have Helped Us Do Our Part

We thank you, loyal customer, for conserving Wickwire Rope so that more can go to the Liberty Ships. But when you *need* new wire rope to maintain war production, tough, long-lived Wickwire Rope will always be available on priority, to the best of our ability.

• • •

Wickwire Spencer was first in New England to be awarded the Maritime M and Victory Fleet Flags for excellence in production of rigging for the U. S. Merchant Marine. A Gold Star has been added for maintaining that record.

WICKWIRE
WICKWIRE SPENCER STEEL COMPANY

WICKWIRE ROPE

Sales Offices and Warehouses: Worcester, New York, Chicago, Buffalo, San Francisco, Los Angeles, Tulsa, Chattanooga, Houston, Abilene, Texas, Seattle. Export Sales Department: New York City

WISSCO PRODUCT

STRIPPING, ROAD BUILDING, CLEANING-UP IS HANDLED IN A HURRY WITH *2-CYCLE DIESEL POWER*

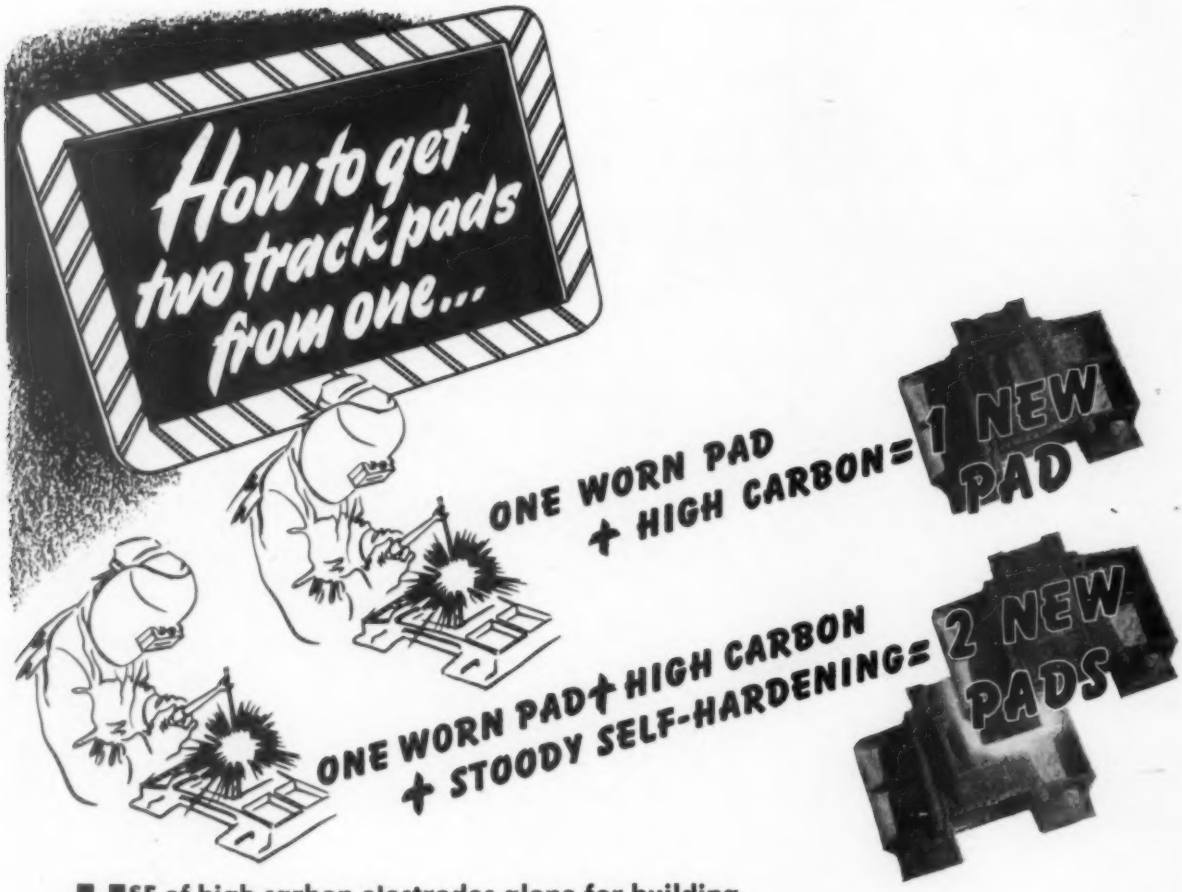
The day this Allis-Chalmers, 2-Cycle Diesel tractor and scraper "go at it" on your operation . . . the dirt will really start to move. Whether the job is rebuilding that bad section of road . . . stripping, excavating, or other similar work . . . you will marvel at the power and speed of this outfit. There's less tugging to load . . . less gear shifting. Smooth 2-Cycle Power hangs on with steamlike tenacity. You get heaping loads in record time . . . rear-dump them wherever you desire — on the level, over a slope, or other ordinarily hard-to-get-at places. Makes short work of tough jobs. Saves you plenty, too. Fewer repairs are necessary. Operates on ordinary Diesel fuels. Add a bull-dozer, and you can work both ends . . . multiply its usefulness . . . subtract from your cost. Rates high with experienced operators.

If you qualify under government regulations, you can put this fast-moving, money-saving Diesel to work now. Fifteen per cent of our crawler tractor production is released for essential civilian use. See your Allis-Chalmers dealer now about the availability of equipment for your needs.

The above HD-7, 2-Cycle Diesel, with a Gar Wood, 2-wheel scraper and 'dozer, gets quick results for owner Leonard I. Trineman, Hector, Minnesota — shown building truck roads around his crusher.

ALLIS-CHALMERS
TRACTOR DIVISION · MILWAUKEE · U. S. A.

2-Cycle THE MODERN DIESEL POWER



USE of high carbon electrodes alone for building up track pads will merely restore pads to original life. But the addition of a hard, wear-resistant Stoody Self-Hardening application over the high carbon *doubles* the effective life of the reclaimed pad... equals in performance *two new unprotected pads*... and saves the down-time and extra labor for an unnecessary build-up! Additional cost of material and labor are negligible compared to results obtained.

Stoody Self-Hardening saves machinery... adds hours to equipment life... cuts out unnecessary down-time for repairs. A trial order of 250 lbs. of Stoody Self-Hardening will hard-face all pads on an average shovel (up to 5-yard capacity). Many other profitable applications are described in Stoody Specification Sheets. Send for your free copy.

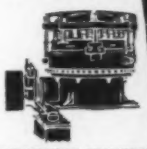
STOODY COMPANY • 1129 W. Slauson, Whittier, Calif.

STOODY HARD-FACING ALLOYS

Stop wear... Eliminate Repair

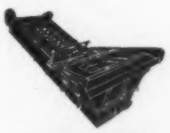
Ships with Bases
ARE THE SHIPS THAT COUNT

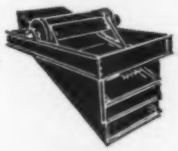

BELT AND BUCKET ELEVATORS


GYRASPHERE CRUSHERS


PRIMARY BREAKERS


JAW CRUSHERS


SAND CLASSIFIERS


PULSATORS


HEAVY DUTY FEEDERS

As a noted naval authority aptly put it, *ships with bases are the ships that count*—on the surface, under the surface, or in the air. All facilities at these overseas bases—airplane landing fields and runways, fuel depots, roads, docks, warehouses, gun emplacements, fortifications are built by the Seabees—the Construction Battalion of the Navy. And Telsmith aggregate-producing equipment is helping them do a real job.

Seabees are experienced pit and quarry men, road builders, earth moving and construction machinery operators. Navy training makes them a real fighting outfit as well as a first class construction unit.

Telsmith equipment is "experienced" too —its dependability proved over and over by civilian contractors. Today, Telsmith equipment and the Seabees are "shipmates" in the Navy. Bulletin E-11 tells the Telsmith story.

CBE-4

TELSMITH *Equipment*

FOR SAND, GRAVEL, ROCK CRUSHING PLANTS

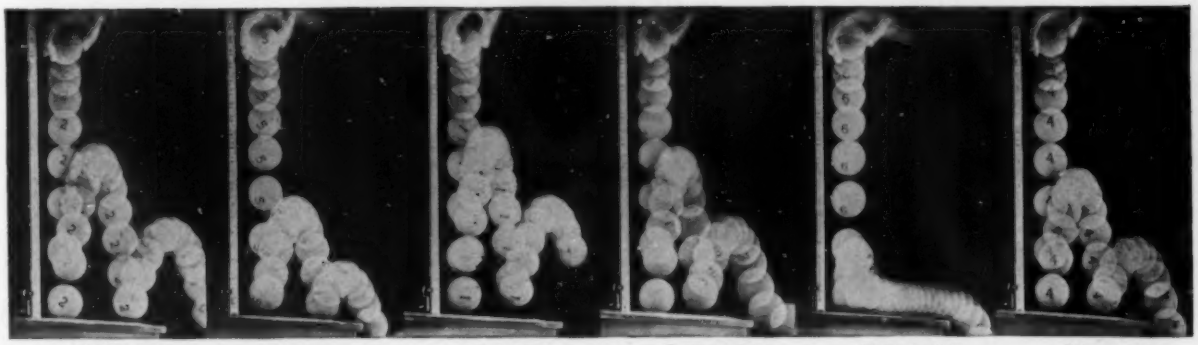
SMITH ENGINEERING WORKS, 508 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Addresses: Sengworks, Milwaukee—Concrete, London

Room 1604—50 East 42nd St. New York 17, N. Y. | 211 W. Wacker Drive Chicago 6, Ill. | 713 Commercial Trust Bldg. Philadelphia 2, Pa. | 19-21 Charles St. Cambridge 41, Mass. | G. F. Seeley & Co. Toronto, Ont. | Mines Eng. & Equip. Co. San Francisco 4—Los Angeles 14

Brandeis M. & S. Co. Louisville 8, Ky. | Charleston Tractor & Eqpt. Corp. Charleston 22, W. Va. | Roanoke Trac. & Eqpt. Co. Roanoke 7, Va. | Clift L. Priester 911 S. 3rd St., Memphis, Tenn. | Wilson-Weesner-Wilkinson Co. Knoxville 8 and Nashville 6, Tenn.

BOUNCE, BALLS, BOUNCE!



2 (Synthetic) 5 (Synthetic) 1 (Natural) 3 (Synthetic) 6 (Synthetic) 4 (Synthetic)

SIX SOLID BALLS OF RUBBER caught in the act of bouncing by a high-speed camera that shoots at the speed of 1/6592 of a second. All of them were dropped from exactly the same height...and yet, what a difference there is! One of the balls is made of a compound containing natural rubber. Each of the other five balls contains one of the five major types of synthetic rubber.

Can you pick out which of the balls is made of the rubber used in making Army barrage balloons? Which rubber is being used today for making tires for military and essential civilian cars? Which one is used for bullet-sealing gasoline hose? Which for insulating tape? Which for making lacquer hose? Try your skill. You will find the answers to these questions in the box at the bottom of this page.

SYNTHETIC RUBBER IS NOT JUST ONE NEW KIND OF RUBBER

It is a whole family of new materials each with its own important uses

Bounce the balls as much as you please. One bounces high. One bounces low. One bounces in between. Which one is best? Actually, there is no one "best kind" of rubber for every purpose. Without all of these main types of synthetic and natural rubber, it would be impossible to beat our enemies and bring our victorious men home as swiftly as possible.

The rubber industry, the chemical and petroleum industries, the Government, working as a team, have made this achievement possible. By pooling all their experience with synthetic rubber, their resources, their skill, they have broken the threat of "rubber shortage" the Axis counted on to throw us out of the war. More than that, they have produced types of synthetic rubber that can do special jobs better than they have ever been done before...and for all time declared our independence from any future cut-off of the nation's rubber supply.

That is the true meaning of the synthetic rubber program. We are proud to have contributed our experience and our resources to doing this job...and doing it in record-breaking, history-making time.

What the future holds for synthetic rubber is not yet fully known. Yet this much is certain. When the war is won, the knowledge we are gaining every day through the use of all these synthetic rubbers, alone and with natural rubber, will make peacetime products...whether tires for your car, belts for your factory, waterproof footwear for your children, or gasoline hose for your service station...better and more serviceable than they have ever been before.

THEY MAY LOOK LIKE "SIX OF A KIND" BUT HERE ARE THE ANSWERS TO THE WAR JOBS EACH ONE CAN DO

1. This ball was made with natural rubber...today used in limited quantities in combination with synthetics because of our small reserve stock.

2. Used for tires, conveyor belts, fire hose and many other products. It is most like natural rubber and can be quickly and efficiently processed.

3. Used for making solvent and lacquer hose and other products where the utmost resistance to solvents is needed...better than natural rubber for these purposes.

4. Used for making bullet-sealing fuel hose for planes and for other uses where high resistance to aromatic fuels is essential.

5. Used for coating barrage balloons, tank linings, packings, acid hose, wires and cables. This type does not support combustion and is highly resistant to sunlight and chemicals.

6. Used for insulating tape, molded parts. It is soft, pliable and odorless.

Listen to United States Rubber Company program, featuring New York Philharmonic Symphony Orchestra, Carl Van Doren, and a guest star, broadcast over Columbia network every Sunday afternoon 3:00 to 4:30 P. M. Eastern War Time

1230 Sixth Avenue • Rockefeller Center • New York 20, N. Y.

THE NATION'S BIGGEST STOCK PILE OF RUBBER IS STILL THE RUBBER ON OUR CARS AND TRUCKS...CONSERVE YOUR TIRES!

In Canada: Dominion Rubber Company, Ltd.

UNITED STATES RUBBER COMPANY

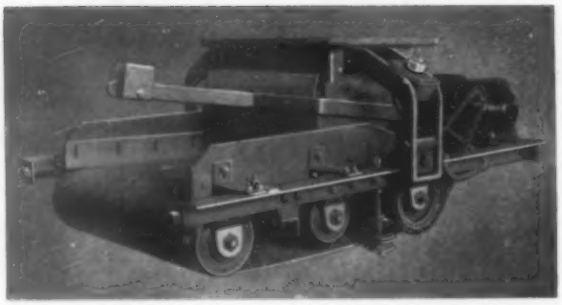
HOW TO INCREASE EXISTING GRINDING MILL CAPACITY

Excerpt from a mill superintendent's statement in Rock Products Magazine, August, 1942, page 72:

"The compartment mills at one of our plants were equipped with sling type or 'cradle' feeders. These feeders were not positive enough, as the amount fed would vary greatly due to variations in the size of the clinker handled. There was no way of gauging the amount of clinker being fed. We have corrected this condition by installing Constant Weight belt feeders, and obtained a substantial improvement in mill capacity."

The Constant Weight Feeder is a Hardinge product. It may also be equipped with a weight totalizing and rate recording device at but slight extra cost.

Write for Bulletin 33-C



HARDINGE

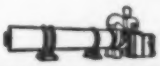
COMPANY, INCORPORATED – YORK, PENNSYLVANIA

122 East 42nd Street, New York, N. Y. | 205 West Wacker Drive, Chicago, Illinois | 501 Howard Street, San Francisco, California | 200 Bay St., Toronto, Ontario, Canada

CONICAL MILLS

COUNTER CURRENT CLASSIFIERS

THICKENERS CLARIFIERS



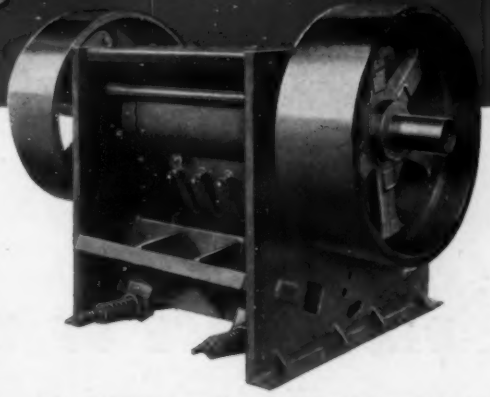
RUGGLES-COLES DRYERS

CONSTANT WEIGHT FEEDERS

TUBE ROD AND BATCH MILLS

BUILT TO OUTPERFORM

The 2540 Primary Breaker is intended for quarry and similar use.

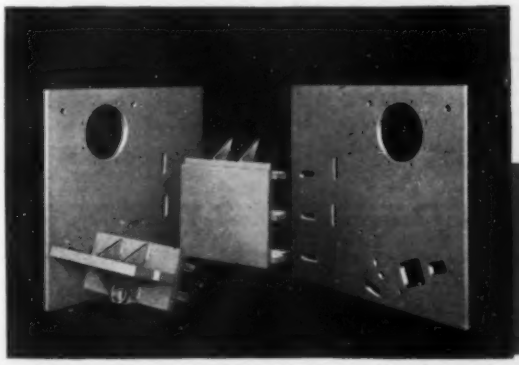


The 1036 General Purpose Crusher is suitable for gravel work, and also for reduction work in quarries.

ARMY-NAVY

• Wherever you expect to use a Crusher . . . in a portable, semi-portable or stationary plant . . . bear in mind it is the one unit that has to withstand the roughest treatment (sledge-hammer punishment and shock) and that its performance therefore controls your profit as well as the amount and kind of aggregate you produce. Being the heart of the plant, crusher capacity must be adequate, and production steady, if lags in output are to be avoided. • Austin-Western has kept these considerations uppermost in mind throughout the engineering and building of its new line of Welded Frame Jaw Crushers. The eight models range in size from the 1016, smallest of the General Purpose Crushers, to the 2540 Primary Breaker. The whole story of these ultra-modern Jaw Crushers and their companion Roll Crushers is yours for the asking. THE AUSTIN-WESTERN ROAD MACHINERY CO., Aurora, Illinois, U.S.A.

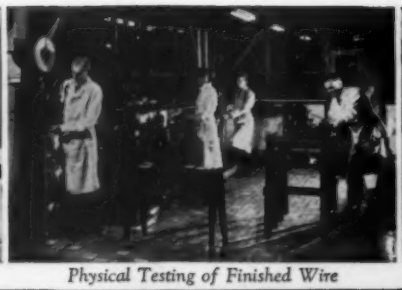
These 1024 crusher parts show how side plates and cross members appear before they are fitted together, welded, machined.



BUILDERS OF ROAD MACHINERY SINCE 1859

Austin Western

Testing Steel for Hardness



Physical Testing of Finished Wire

Microscopic Examination of Steel

A Section of Union Wire Rope Research Laboratory

Three Times Won For Excellence In War Production

BIRTHPLACE OF TOUGHNESS

Out of some 4000 steel formulas, relatively few are suited to wire rope making. From long years of experience, Union Wire Rope engineers and metallurgists have determined upon a steel formula for each type of Union Wire Rope.

To be certain each heat meets specified analysis, steel is examined under a powerful microscopic photo and scanning machine (see photo at top right). In minute detail its micro structure and inherent grain size are analyzed. From this analysis is determined the controlled heat-treatment and the subsequent processing operations it is to be given in the mill to secure wire meeting the exact specifications desired.

Samples of the wire then are brought back into the elaborate Union Wire Rope laboratory. First it is subjected to hardness tests under a delicate pendulum machine (see left photo above) and its Brinell hardness determined. Then in a group of six physical testing machines (see photo at top center) the actual tenisle strength, torsional values, fatigue life, ductility and hardness of wires of all grades and sizes are checked. Here, before the wire is stranded, the ultimate tensile strength, toughness and durability of Union Wire Rope is pre-determined.

Many other research activities are constantly carried on in Union Wire Rope's laboratory. Although not pictured here, there are scientific research machines for testing wire coatings by the salt spray, Preece, strip test and wrap test methods.

Here tough wire is born and on long lines of stranding machines (many of them designed by our own engineers) it grows into Union Wire Rope of maximum strength and greater toughness to withstand harder use and longer service.

UNION WIRE ROPE CORPORATION
2156 Manchester Ave., Kansas City, Mo.

Tulsa • Houston • Chicago • Salt Lake City • New Orleans • Monahans Portland • Ashland, Ky. • Atlanta

B-42

SEND FOR ROPE DOPE • Tells how to make wire rope last longer—how to handle and install it—how to socket or splice—and a wealth of other helpful information.

WHEN YOU NEED PREFORMED WIRE ROPE
SPECIFY **union-formed**

union *Wire Rope*

"THE ULTIMATE LOW COST WIRE ROPE"

Dear Mom:
I'm among old friends way over here ~ today a B-G plant + I helped assemble when Barber-Greene!

We have had to learn to walk and to save fuel and stop overeating. Prices are going up with taxes. We at home — among familiar scenes and faces—are having it "tough."

But Harry, our office boy, wrote of the thrill he got meeting a Barber-Greene Ditcher as he marched into Bizerte. He, and 126 other Barber-Greeners in Service write us with nostalgia of meeting Barber-Greene machines on foreign soil. To them, those pounding, unlovely masses of welded steel represent HOME. To them, in Africa, Sicily, the South Pacific, Alaska, Greenland, Iceland, those machines working in burning sands, coral atolls, or frozen tundra are the one familiar sight. Home!

Those in service inspire us—as they must all producers of war goods — to "E" production and "Star" production. As we get more and more of these reminders of home — American construction equipment,—out of the plants to the front, we will hasten that day when home is really home, and not just a memory inspired by a mass of steel at Bizerte, Berlin or Tokyo.

43-4

BARBER-GREENE

AURORA, ILL.

for THIS battle, G.H.Q. is at YOUR own desk!

★ Here's how you—yes, YOU—can carry out a smashing "pincer movement" against the Axis. Swing in on one flank with increased production of war goods! Drive in on the other with redoubled purchases of War Bonds through your Pay-Roll Savings Plan!

You're an officer in both of these drives. Your personal leadership is equally vital to both. But have you followed the progress of your Pay-Roll Savings Plan as closely as you have your production?

Do you know about the new Treasury Department quotas for the current Pay-Roll Allotment Drive? *Quotas running about 50% above the former figures?* You see, these new quotas are based on the fact that the armed forces need more money than ever to win the war, while the average worker has more money than ever before to spend. Particularly so, on a *family income* basis—since in so many families several members are working, now.

Remember, the bond charts of today are the sales curves of tomorrow! Not only will these War Bonds implement our victory—they'll guard against inflation, and they'll furnish billions of dollars of purchasing power to help American business re-establish itself in the markets of peace.

So get this new family income plan working at once. Your local War Finance Committee will give you all the details of the new plan. Act today!

This advertisement prepared under the auspices of the War Advertising Council and the U. S. Treasury Department

LET'S KEEP ON Backing the Attack!

This Space is a Contribution to America's All-Out War Effort by

ROCK PRODUCTS

HAZARD LAY-SET *Preformed* REWARDS YOU BY—

One of these invariably justifies its specification

1. LASTING LONGER
2. BEING SAFER TO HANDLE
3. SPOOLING BETTER
4. BEING FASTER TO INSTALL
5. REFUSING TO "PORCUPINE"
6. MAKING LANG-LAY MORE SERVICEABLE
7. BEING FREE OF TENDENCIES TO KINK
8. REQUIRING NO SEIZING WHEN CUT
9. RESISTING BENDING FATIGUE LONGER
10. GIVING YOU GREATER DOLLAR VALUE

Look closely at this discarded Hazard **LAY-SET** Preformed wire rope. See any protruding wires?... No—not one of those broken crown wires leaves its assigned place. They remain flat and in place *because they are preformed.* • This means safer, faster, surer handling by workmen. No vicious barbs that may cause blood-poisoning and compensation claims. Hazard **LAY-SET** Preformed instills confidence in your men; fewer time-out accidents; steadier production. • It also means longer rope service and fewer needless damages to your equipment. Specify Hazard **LAY-SET** Preformed for your next rope. It gives you greater dollar value.

HAZARD WIRE ROPE DIVISION, Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Fort Worth, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Portland, Tacoma
AMERICAN CHAIN & CABLE COMPANY, INC. • BRIDGEPORT • CONNECTICUT

GREEN SIGNIFIES SAFETY

HAZARD LAY-SET *Preformed* WIRE ROPE

ROCK PRODUCTS

NATHAN C. ROCKWOOD
Editor-in-Chief

EROR NORDBERG, *Editor*
WALTER B. LENHART, *Associate Editor*
RALPH S. TORGERSON, *Managing Editor*

CONTRIBUTING EDITORS—VICTOR J. AZBE, *St. Louis, Mo.*; DR. F. O. ANDEREGG, *Newark, Ohio*

TRADEPRESS PUBLISHING CORPORATION, 309 W. JACKSON BLVD., CHICAGO 6, ILLINOIS

FUTURE ROCK PRODUCTS

HAVING spent better than a month in Washington, New York, Northampton, Penn., and lastly in Wilmington, Del., at the fall meeting of the Industrial Minerals Division of the American Institute of Mining and Metallurgical Engineers, the writer feels that he has had something of a foretaste of what our rock products industries have in store for them in the not too far distant future. Seriously minded economic geologists and industrialists express concern over the reckless manner in which the prosecution of war has caused this country to exploit its natural resources, for the benefit of at least two countries—Russia and China—which still have tremendous untapped mineral resources. The end of our own resources in high-grade iron ore, zinc and lead ores, bauxite (aluminum ore), coal and petroleum are within the range of these geologists' vision—high-grade iron ore particularly so.

It is the business of many men with whom I have associated in the past few weeks to look ahead and plan against all contingencies—men who believe that ideas and ingenuity count for more in long range possibilities than any one or more natural resources. They believe that scientists can develop structural materials out of some of the more common minerals, which will be definitely superior to those in use today. The interesting thing for our readers is that a good share of these minerals will come from the rock products industries. They will be supplied by live-wire operators in the form of crude concentrates, which will require little processing that the producers already in this field are not familiar with, if they have kept pace with the current literature in this field.

It was not but a few years ago that the portland cement industry knew nothing of minerals separation by froth flotation and even more recently by centrifugal classifiers. The spread of knowledge in this field has been rapid, thanks to C. H. Breerwood and his associates who pioneered the developments, and have already shown the way for making mineral separations in the industrial mineral industries way beyond what was known and practiced in the metallurgical field. The minerals separation operation at the new plant of the Universal Atlas Cement Co., Northampton, Penn., is as fine an example of the possibilities of this process as can be found in any industry. We urge our readers to study it not merely as processing for portland cement slurry, but for its implications in the solution of many problems of minerals separation in the years to come, when the producers of any fine ground rock may be seeking to concentrate some one or more of its constituents.

To return to the subject of substitutes for steel, we have first the light metals and their alloys. While aluminum ore resources of high grade bauxite, in this country, are limited, the resources of magnesium ore in the form of dolomites are unlimited. The lime industry is the logical source of concentrated magnesium ore, which is dolomitic lime. Other light metals such as lithium are coming into use for alloys and in solutions and as salts. Lithium has some very remarkable properties which will cause a greatly increased demand, if it can be produced in quantity at a reasonable price. It is a fairly common small constituent of many of the older rocks and some rocks are mined or quarried for it alone.

Perhaps the most intriguing thing in possible structural materials is the prospect that reinforced plastics may replace not only steel but even the light metals. The proposed reinforcing material is glass fibre. Glass fibres drawn down to threads one-half of a micron in diameter (one-fifty thousandth of an inch) have tensile strengths way beyond anything conceived of in any structural material—running into millions of pounds per square inch. Plastics reinforced with glass fibre or glass fabric are readily molded into any shape without the application of great heat or great pressure, and their strengths are far beyond those attainable with metals. Moreover, they are light weight. For example, by using impregnated glass fibre as insulation, it has been possible to make a 10-hp. electric motor that weighs only 10 lbs.

Glass is almost entirely sand and limestone, so should glass become extensively used as a structural material, it can only mean more business for the rock products industry than it now gets from the iron and steel industry. However, it also means that many limestones and silica sands will require more processing than are required today; and that is why we believe the story in this issue on limestone processing at the Northampton cement plant should prove interesting to readers who are not in the cement industry.

By and large, the demand for rock products is bound to expand into fields the present operators probably have never dreamed of serving. At the same time processing is going to get more difficult, because even in the case of ordinary mineral aggregates for concrete, the user will soon be demanding separation of the sheep from the goats.

Nathan C. Rockwood

NEWS ABOUT PEOPLE

Engineering Professor

FRANKLIN C. ROGERS, formerly New York City field engineer for the Portland Cement Association, is now assistant professor of civil engineering at Rutgers University, New Brunswick, N. J. Mr. Rogers has been active in the affairs of the Junior Branch of the Metropolitan section of the American Society of Civil Engineers and served as president for one term. Recently he was admitted as associate member to their senior body. His many friends in the construction industry wish him well.

With Contractor

OTIS E. PERKINS, formerly associated with the Ross Island Sand and Gravel Co., Portland, Ore., is now with Hanford Concrete Contractors, which is made up of Smith, Hoffman and Wright Co., Joe Shiely Co. of St. Paul, Minn., and Hallett Construction Co. of Winona, Minn. Mr. Perkins is also operating a plant for the duPont Company for use on the Hanford Engineer Works.

Construction Superintendent Aggregate Plant

L. VERNON MULHERRON has been superintendent on construction of a $280,000 lightweight aggregate plant recently built near Santa Maria, Calif., for the Airox Company. The aggregate produced will be used in the construction of concrete ships for the Maritime Commission. Alex Kline of the University of California was plant research engineer.

Bauman Leaves W.P.B. To Go With N.C.S.A.

EDWARD W. BAUMAN has resigned as chief of the Non-Metallic Section, Mining Equipment Division, War Production Board, to become field engineer of the National Crushed Stone Association. He will report for duty on November 15. Mr. Bauman was educated at Ohio Northern University. After leaving school he joined a survey party in connection with the Colorado River Aqueduct. Later he became junior materials engineer with the Illinois State Highway Department, specializing in materials testing and concrete research. In 1926 Mr. Bauman accepted appointment as first assistant materials engineer with the Tennessee Highway Department and in 1929 he was promoted to engineer of materials and tests. From 1937 to 1941 he held the position of highway materials engineer for the Republic Steel Corp. In 1941 he joined the Non-Metallics Section of the Mining Equipment Division of the War Production.

Edward W. Bauman

Mr. Bauman at present will spend a considerable amount of his time in the field, cooperating as fully as possible with engineers, contractors and crushed stone producers in giving wider and more intimate distribution of information which has been developed concerning the use of stone. His work will require that he be alert to specification requirements pertaining to stone and its uses and, whenever possible, he will bring the newest information regarding crushed stone to the attention of those responsible for the writing of specifications. He will implement the Association's activities in ways aimed particularly at giving widespread distribution to the facts which have been thus established.

Joins National Slag Assn.

A. G. TIMMS, formerly with the Portland Cement Association, has been added to the staff of the National Slag Association in Washington, D. C., in the capacity of office and field engineer. This announcement was made at a special fall meeting of the Board of Directors of the National Slag Association which was combined with its annual meeting in Washington, D. C., on October 13 and 14. Officers elected were president, L. E. McDermut, president of the Illinois Slag and Ballast Co., Chicago, Ill.; vice-president, Fred Hubbard, consulting engineer with the Standard Slag Co., Youngstown, Ohio; managing director, H. J. Love.

The National Slag Association has been awarded the Certificate of Recognition by the Salvage Division of the War Production Board for its patriotic effort in the National Salvage Program of 1942-43.

Manager P.C.A. Information Bureau

RALPH D. RADER has been appointed manager of the Portland Cement Association Information Bureau in San Francisco, Calif., succeeding J. E. JELLICK, who was recently appointed sales manager of the Pacific Portland Cement Co. Mr. Rader was State Highway Engineer of Montana for eight years, and for the past three years has been working on army camp construction with Leeds, Hill, Barnard & Jewett of Los Angeles, and H. J. Brunnier of San Francisco.

Appointed Manager

G. M. HUMPHREY of Beardstown, Ill., has been made manager of the Lawson Sand Co., Hannibal, Mo., which was purchased recently by Curtis Logsdon and his sons, owners of the Logsdon Sand and Gravel Co., Beardstown, Ill.

Safety Council President

R. A. HUMMEL, president of the Lone Star Cement Corp., New York, N. Y., has been elected president of the Inter-American Safety Council. This organization, modeled after the National Safety Council, has been conducting an accident prevention program throughout Latin America for the past four years. All plants of the Lone Star Cement Corp. in the United States and Cuba are Portland Cement Association trophy winners.

Resigns

O. R. OSBURN, district foreman of the Missouri State Highway Department, Mexico, Mo., for the past five and one-half years, has resigned to accept a position as manager of the newly established St. Joseph Vault Co., St. Joseph, Mo.

U. S. Gypsum Promotion

HARRY H. SURPRISE, office and personnel manager for the United States Gypsum Co., Jacksonville, Fla., has been promoted to assistant production manager for the company, with headquarters in Chicago, Ill. Mr. Surprise has been with the Gypsum company for seven years. J. V. TIMMONS, formerly connected with the Midland, Calif., branch, succeeds Mr. Surprise as office and personnel manager of the Jacksonville office.

Reaches 90th Milestone

JOHN S. PATRICK, president, Eastern Magnesia Talc Co., Inc., Burlington, Vt., recently celebrated his 90th birthday. He is still active and keen about business and civic affairs. Mr. Patrick is also president of the G. S. Blodgett Co., Inc., and a director of the Chittenden County Trust Co.

Warner Appointments

HERMAN EGNER is the new general superintendent of The Warner Co. Philadelphia yards and trucking; B. M. THOMAS is now general superintendent of marine operations. PETER STANK has been appointed to the position of master mechanic of Berks St. Maintenance Department, Philadelphia, Penn., and will have general supervision of the Berks St. machine shop, boat yard, electrical force and storeroom.

Herman Egner

Appointed Manager

W. J. ALEXANDER, chief field engineer for the Colonial Mica Corp., Sylva, N. C., has been appointed southern manager. Before becoming associated with the company, Mr. Alexander was superintendent of mines for the United Feldspar and Minerals Corp. He also formerly was a mining engineer for the Whitehall Co.

Returns to Duties

HENRY ALGERT has returned to his duties as chief field engineer with Concrete Ship Constructors, National City, Calif., after a brief tour of duty with the MacEvoy Shipbuilding Co., Savannah, Ga. He is in charge of detailing forms and reinforcing steel, also of surveys.

In the Navy

W. W. PURDY, co-owner of the Killbuck Sand and Gravel Co., which operates plants at Brinkhaven and Lucas, Ohio, is now a Lieutenant Commander in the Navy, stationed at the Puget Sound Navy Yard, Bremerton, Wash. Mr. Purdy joined the service in February, 1943, and took his training at Norfolk and Williamsburg, Va.

•

Y. Z. ROYAL, formerly quarry superintendent for the Birmingham Slag Co., Birmingham, Ala., is now a member of the United States Navy.

Promoted to Gen. Manager

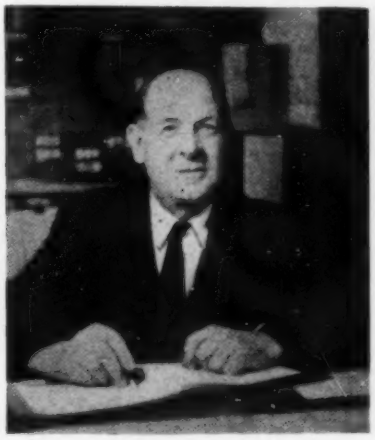
NELSON SEVERINGHAUS, superintendent, Consolidated Quarries Corp., Decatur, Ga., is now general manager of the company. Kelsey D. Howington, assistant treasurer, has been made treasurer, and W. Frank Alford has been engaged as assistant

Nelson Severinghaus

superintendent. This announcement was made recently by G. A. Austin, president of the company. A. Fillmore Hyde retains the chairmanship, and A. B. Kirkman remains as vice-president and sales manager.

Transferred

R. H. CHANDLER, district manager for the United States Gypsum Co., Portland, Ore., has been transferred to Washington, D. C., to take charge of the company's business in that area. R. C. Walesby, who has been in charge of special job sales for the company, has been appointed to succeed Mr. Chandler in Portland.

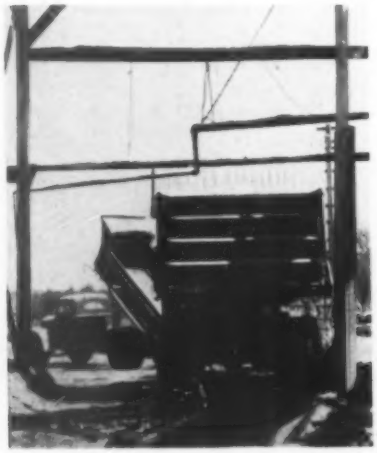


B. M. Thomas

Peter Stank

Rinsing Gravel Pays Dividends

STEWART AND NUSS, INC., Fresno, Calif., operates a sand and gravel plant in which the aggregates are prepared with Symons vibrating screens in conjunction with an Esperanza type, drag classifier. This type of classifier is simply a rubber belt to which are fastened angle irons. This endless belt operates in a suitable vat from which it scrapes the settled sand and gravel. The plant has a capacity of about 150 tons per hour and does a thriving trucking business in that area.



Loaded gravel trucks pass under spray before delivery to customers

To insure thorough washing, all trucks of gravel before they leave the plant drive under a perforated pipe from which generous sprays of water issue at high pressure. This gives the aggregates a thorough soaking and is one of the several reasons why that company enjoys a good business.

Rinser Saves Rewashing

A large Southern sand and gravel company usually loads from bins when the plant is operating to supply large contracts, but a considerable stockpile is carried to fill small orders. Gravel lying in the stockpile for any length of time accumulates silt, dirt and dust which, to meet rigid State specifications, must be removed. In order to save rewashing the gravel, a "rinser" was built. The rinser is a device for washing off the light dirt accumulations, at the point of loading.

It consists of a 6- x 8-ft. in plan hopper capable of holding 4 cu. yd. of gravel when heaped full. It is mounted on wooden uprights, the overall height being 20 ft., the maximum height reached easily by a ¾-cu. yd. clamshell. The structure was mounted on skids which made it possible to move it to various stockpiles by means of a tractor. The stockpiles run parallel and adjacent to the railroad track.

Material loaded in the hopper passes to the cars through a 20-in. wooden chute 12 ft. long, movable up and down by a pulley and rope to the ground. A sliding gate enables the gravel to pass from the hopper to the chute.

The bottom of the middle 4 ft. of the chute is cut out and a fine ¼-in. screen, 18-in. by 4-ft., installed in place of the wood bottom.

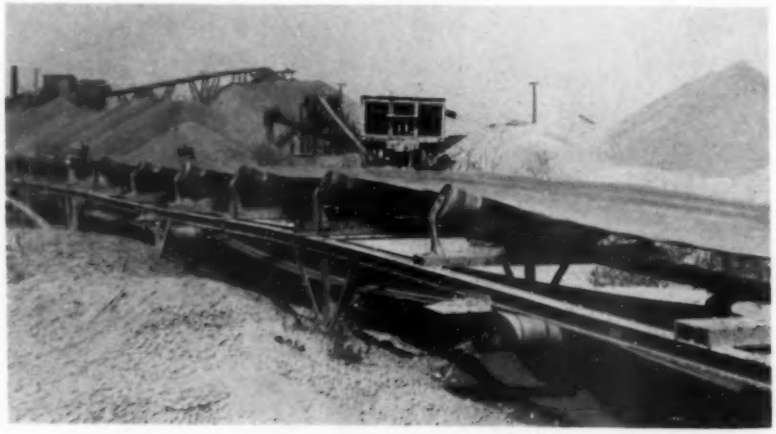
A 2-in. water pipe, 6 ft. long, is fastened to the upper edge of one chute side, and four pipe, one 1¼ in. and three 1 in., 18 in. long, lead from this 2-in. pipe and pass transversely across the chute bottom above it. The 2-in. pipe connects to the main 6-in. pipe of a deep well pump. Five perforations in each 18-in. length of pipe are so directed that water is forced against the flow of gravel coming down the chute. The two upper 18-in. pipe wash above the screen (wooden chute bottom) and the lower two play directly on the gravel when it reaches the screen.

Rinsing chute to wash off light dirt at the point of loading

The "rinser" is spotted by the tractor so that when the chute is lowered into the car, only the lower 4 ft. of it will be in the car (wooden bottom) and the section with the screen bottom will be outside of the car. Fine dust and water passes through the screen and falls to the ground, and a clean gravel is loaded into the cars.

Welded Conveyor

At the many material handling enterprises with which H. J. Kaiser, Dean of Constructors, heads, the use of belt conveyors for transporting materials—sand and gravel, cement rock, etc., is very much in evidence. Low costs and great capacity are evidenced by the many installations. At the Radum plant of H. J. Kaiser Co., Pleasanton, Calif., belt conveyors are used to transport pit material to the washing plant. The conveyor assembly consists essentially of 24-



Conveyor belt structure made from old rails and scrap metal welded together

lb. rails as the horizontal carrying members. To these rails are welded the carrier and return rolls. Spaced about every 15 ft. are mud sills or ties similar to railroad ties. These ties, in conjunction with scrap metal welded to the rails support the entire structure.

Pit conveyors 1000 ft. or more in length and with 36- to 42-in. belt widths work very satisfactorily on these home-made support members.

Power Calculator

By V. W. PALEN

Westinghouse Electric and Mfg. Co.

PLANT ENGINEERS and electricians will find the KVA-KW-HP Calculator a very useful gadget to have on hand—it saves much time in making routine calculations involving electrical capacities. It solves single and three-phase problems expressed by the following formulae:

(a) Single phase

$$\text{Kv.a} = \frac{\text{Volts x Amps}}{1000}$$

$$\text{Kw.} = \frac{\text{Volts x Amps x P.F.}}{1000}$$

$$\text{Hp.} = \frac{\text{Volts x Amps x P.F.}}{746}$$

(b) Three phase

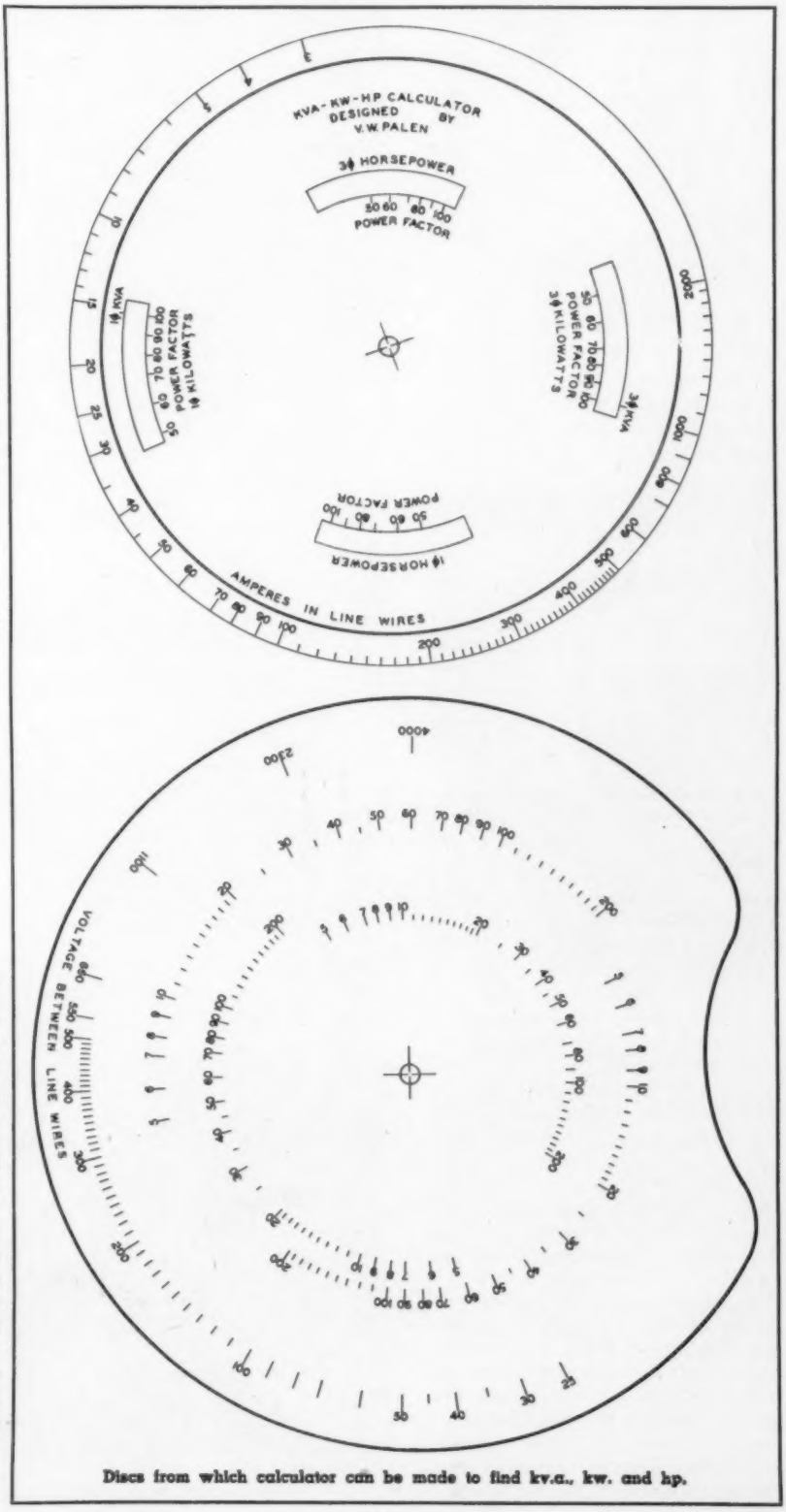
$$\text{Kv.a} = \frac{\sqrt{3}\ \text{Volts x Amps}}{1000}$$

$$\text{Kw.} = \frac{\sqrt{3}\ \text{Volts x Amps x P.F.}}{1000}$$

$$\text{Hp.} = \frac{\sqrt{3}\ \text{Volts x Amps x P.F.}}{746}$$

The range of the calculator 5 to 200 (kv.a, kw. or hp., as the case may be) can be extended easily to cover a range of 50 to 2000 merely by multiplying all values by 10. It can be used to find kv.a, kw. or hp. from known values of amps and volts; similarly it will determine amps for given values of voltage, kv.a, kw. and hp. Thus, knowing the size motor to be installed, an electrician can quickly determine amps—from this he knows what size wire to use for the circuit. Conversely, having read amps at transformer terminals—the calculator tells what load, in kv.a, the transformer is carrying.

To assemble, cut out both discs (also small windows) and mount on cardboard with rubber cement. Punch the center holes carefully—then insert a small brass bolt in the holes. Washers, if used will save wear and tear on the paper. The bolt should be tightened to give the proper pressure on the discs—they must hold their setting, yet turn easily. A drop of solder applied to the nut will make the assembly permanent.



Discs from which calculator can be made to find kv.a., kw. and hp.

Engine Heater for Cold Weather

THOS. SHIPLEY, INC., York, Penn., York Heat Division, has announced a small, compact preheating unit for airplanes which is said to be equally

Compact engine heater helps to start heavy equipment in cold weather

applicable to tractors, trucks, shovels, and other motor equipment operated in cold weather. It weighs only 38 lb. and can be carried around by one man like a suitcase.

This motor preheater is said to produce 90,000 B.t.u. of heat per hour and utilizes 92 percent of all the heat units in the burning gasoline it uses for fuel.

Bead-Loosening Tool

FIRESTONE TIRE & RUBBER CO., Akron, Ohio, has announced the development of a bead-loosening tool which can handle tires of any size. It was developed by W. H. McCollister, veteran research man of the company.

The tool includes a metal bar, hooked at one end, with an adjustable lever attached near the straight end of the bar, and two adjustable hooks. With the tire laid flat and deflated, the tool utilizes a system of hooks and leverage to force any bead loose from its rim in a few minutes. The bead-loosener is packed in a kit

W. H. McCollister supervises as Miss Mittelstead forces detachable hook between the tire and the rim

6- x 6½- x 38-in., and weighs only 48 lb. In addition to the new tool, the kit contains enough equipment to carry through all the work of demounting a tire and mounting it again.

Rust Prevention

THE TEXAS CO., New York City, has devoted a recent issue of *Lubrication* to the subject of rust prevention. This is always a live subject in the rock products industry where much valuable machinery and equipment is meagerly housed from the elements; it is even more interesting now when many plants will have to stand idle for long periods.

The article in *Lubrication* concludes as follows: "By reason of the extensive amount of research which has been devoted to this matter of rust prevention by the Petroleum Industry, the problem is changing from one of development to one of application. In other words, a sufficiently wide range of rustproofing materials are available to assure protection for every type of service. The War has speeded the development of products and methods of application which are constantly being improved. It is only necessary to select and apply the correct rust-proof material for the protection required."

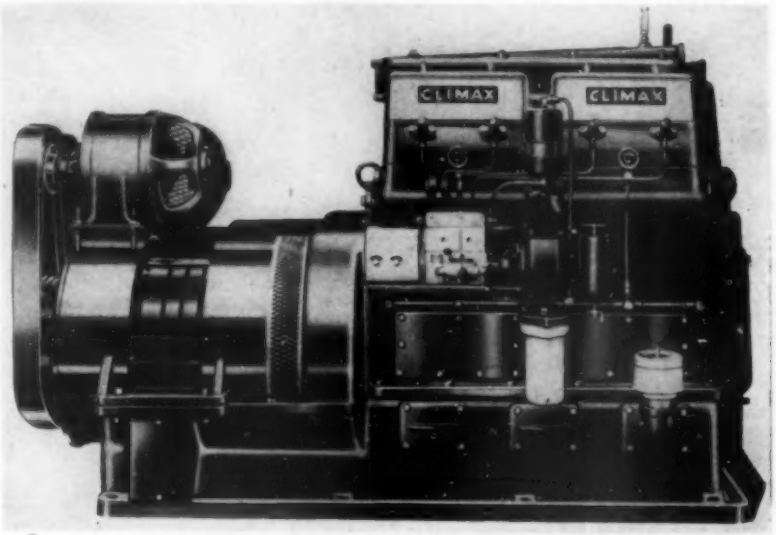
Building Diesels

CLIMAX ENGINEERING CO., Clinton, Iowa, is now in production on two solid injection, compression ignition engines. These Diesel engines are additions to the company's line of gas engines, 8 to 480-hp., generating sets, 300 watts to 312 kv.a., and complete accessory equipment.

Both new engines are 4-cycle, full Diesels which are designed for use as power units for light plants and as primary drives for pumps, compressors, mills, mine equipment, and marine service.

Model D148 is a two-cylinder unit with a maximum rating of 22 hp. It may be equipped for pulley drive with or without clutch or clutch and reduction gear or auxiliary power takeoff. As a Diesel-electric plant it may be direct-connected, on a single base, with a 15 kv.a. generator.

Model D297 is a four-cylinder unit with a maximum rating of 44 hp., and drive equipment similar to the two-cylinder model may be furnished. A special feature of D297, however, is that a flywheel, clutch, generator



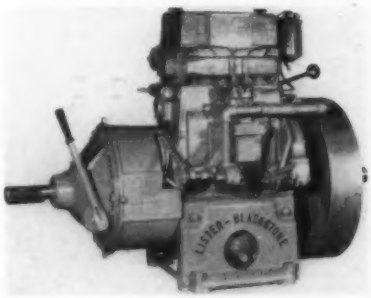
Four-cylinder, Diesel-electric unit driving a 30 kv.a. generator

or marine gears may be installed on either or both ends, providing a radiator is not used. For electric power and light, the D297 may be used to power a 30 kv.a. generator.

Easy-Starting Diesel

LISTER-BLACKSTONE, INC., Milwaukee, Wis., manufactures a line of Diesel engines having some interesting features. The engine shown in the illustration is a Model CE, 2-cylinder, 4-cycle, hand-operated Diesel with a bore and stroke of 4½- x 4⅜-in., and it develops 16 b.h.p. at 1200 r.p.m.

A feature of this model is the patented fuel combustion chamber with compression ratio change-over valve for instant cold-starting by hand. The problem of quick starting is solved in the Lister engine by cutting off the small auxiliary chamber, thus reducing the total size of the combustion chamber. The result is a great increase of compression in the cylinder to a point where the heat thus generated is sufficient to positively effect combustion. After the



Two cylinder, four-cycle hand-started Diesel engine develops 16 b.h.p. at 1200 r.p.m.

engine starts, turn of the handwheel removes the cutoff plug from the aperture and the auxiliary chamber again becomes an integral operating part of the combustion chamber.

Motor Starter

ALLIS - CHALMERS MANUFACTURING Co., Milwaukee, Wis., has added the Type H motor starter to its line of industrial control, designed to withstand severe war time operating conditions. High interrupting capacity, disconnecting-type fuses are utilized in combination with a heavy duty oil switch in the new starter.

Type H starters have been developed for both induction and synchronous-type motors rated up to 1000 hp. at 2300 volts and 1750 hp. at 4600 volts, 3-phase, 60 or 50 cycles. Their usages cover: full or

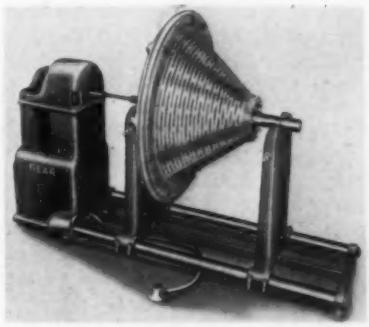
Starter protects motors from sustained overloads, locked rotor condition, single-phasing, etc.

reduced voltage starting, dynamic braking, reversing and special applications.

Short circuit protection up to 160,000 kva. at 2300 volts and 320,000 kva. at 4600 volts eliminates the need for a back-up breaker within these kva. ratings. Disconnecting type fuses combining high interrupting capacity with fast-clearing action, hold short circuit currents to safe values which do not damage the control. Fuses operate only under actual short circuit conditions and will not blow unnecessarily.

Dynamic Balancing

BEAR MANUFACTURING CO., Rock Island, Ill., has developed dynamic balancing machines to correct static and dynamic unbalance in any rotating part. It is well known that excessive vibration will result in premature failure of machinery. All repaired parts or new parts installed in machinery should be checked for balance.



Static and dynamic balancing machine designed to handle large parts

In the illustration is shown the Model 400, heavy duty static and dynamic balancing machine, which has been designed to handle quickly and efficiently rotating bodies ranging up to 4000 lb.

The machine is sturdily constructed with all castings being made of grey iron. A self-energizing brake is used to bring rotating bodies to a stop. The driven sheave and flexing heads are mounted on ball bearings for smooth operation and continuous service. Support columns are moved along the bed by means of hand wheels. Spark indicating means is visible from both support columns when determining angular position of unbalance. The machine is equipped with a multiple V-belt drive for smooth operation.

Handling Bulk Materials

TOWMOTOR CORPORATION, Cleveland, Ohio, has designed a shovel type scoop for attachment to its stand-

Lift truck equipped with scoop which may be loaded or unloaded at any point within the lift range

ard lift truck models. The scoop is available in capacities from 8 to 25 cu. ft. to handle bulk material like foundry sand, cement, etc.

Manually controlled, the scoops can pick up or dump materials at any point within the lift range. Resetting to digging or carrying position after dumping is accomplished by lowering to floor level until spring-operated catches automatically take hold.

An optional feature is an anti-spilling device which fits over the front lip of the scoop and permits transporting full loads of loose material at good speed over rough surfaces.

Arizona Concern Operates Michigan Gravel Plant

FISHER CONTRACTING CO., Phoenix, Ariz., is operating the former Ward Sand & Gravel Co., Oxford, Mich., as the Ward Sand & Gravel Division of the parent company. This change occurred in March, 1943. John F. Fisher, Pontiac, Mich., is managing director; Elmer Clark is plant manager; and L. J. Dyament is sales manager. The Prescott Sand & Rock Co., Prescott, Ariz., is a limited partnership with H. H. Bandy as manager and co-owner with Fisher Contracting Co. Operations at Prescott date back to 1938.

Build Columbia Cement Mill

COLUMBIA, South America, produces all the cement consumed in the country. A new plant is now under production at Puerto Isaacs, State of Valle. Two new plants are planned; one at Suratá, near Bucaramanga, State of Santander, and the other at Nare, State of Antioquia.

May Repeal 3 Percent Tax on Transportation

A BILL has been introduced by Congressman Fulmer of South Carolina, H.R. 2593, which proposes repeal of the 3 percent tax on amounts paid for the transportation of property for hire. The bill has been referred to the Ways and Means Committee of the House of Representatives. Acting Secretary of the Treasury D. W. Bell has recommended enactment of the legislation.

Crushing Agstone in Wisconsin

ARTHUR OVERGAARD has set up a portable crushing plant at Portland near Sparta, Wis. He has filled orders for 5000 tons of agricultural limestone and has a backlog of 5000 tons to fill before starting on highway construction orders. Tests of the limestone show it to be 93 percent calcium carbonate.

A.A.A. Extends Deadline for Phosphate Payments

REPORTS from the Tennessee phosphate field show an unprecedented heavy movement of ground rock phosphate, principally to Illinois farmers. This increased demand is said to result from the big increase in soya bean acreage for which phosphate fertilizer is particularly valuable. Another reason attributed to the heavy demand is that the A.A.A. has extended to January 1, 1944, the dead line up to which in Illinois the government agency will pay users of rock phosphate $13.00 per ton in benefit payments. This contrasts with payments by one state of $15.00 per ton, several ranging between $11.00 and $12.00, a number at $7.50 per ton, and a few at $4.50 per ton.

Ready Mix for Street Repairs

CAMDEN LIME CO., Camden, N. J., has a contract for a large volume of ready mix concrete for the base course used in filling street cavities caused by the removal of old trolley rail for scrap. Camden Lime Co. is working toward a new contract achievement in which it will lay 1000 cu. yd. of concrete in one continuous operation, remaining on the job and pouring concrete until the job is completed.

To Make Agstone

ARTHUR R. ALVIS, formerly of Cedar Rapids, Iowa, has opened up a quarry near West Plains, Mo., and is making preparations to crush agricultural limestone. Contracts under A.A.A. for 30,000 tons of agricultural limestone will keep the plant busy for some time supplying Howell county farmers. Mr. Alvis was formerly with the Universal Engineering Corporation at Cedar Rapids. The initial capacity of the plant will be 400 to 600 tons daily.

Trucks equipped with automatic spreaders will deliver and spread agricultural limestone to farmers, but it may be purchased at the quarry for $1.45 a ton, according to Mr. Alvis. Agstone will be delivered and dumped at the farm at a cost of $2.30 a ton, but if it is spread on the land it will cost $2.65.

Hydraulic Cements

FINAL FIGURES for 1942 issued by the Bureau of Mines on hydraulic cements other than portland show a total of 2,560,426 bbl., which represents a decrease of 11 percent in comparison with 1941. The average factory value per barrel of the product shipped from the mills was $1.46 in 1942; and $1.36 in 1941.

Bomb Jap-Controlled Indo-China Cement Plants

BOMBERS from the U. S. Army Air Force command of Maj. Gen. Claire Chennault recently dropped more than 20 tons of explosives on the cement plant at Haiphong, which had just resumed operations after a previous bombing. According to news reports the plant was a source of material for the construction of runways, docks, and other buildings on Hainan Island and Indo-China. It is said that this plant supplied 90 percent of Indo-China's normal requirements for cement.

Standardize Sizes of Masonry Units

THE PRODUCERS' COUNCIL, INC., Washington, D. C., a national organization of leading manufacturers of building materials, has set up a proposed "American Standard Basis for the Coordination of Dimensions of Building Materials and Equipment—A62" through a Subcommittee on Modular Products. Chairman of the committee is Architect Max H. Foley.

Endorsement of this program has been made by the National Concrete Masonry Association through a mail ballot which showed 102 for and 20 opposed to modification of sizes to conform to modular sizes. The purpose of this standardization is to cut down the multiplicity of sizes and create standard sizes which will reduce building costs.

For example, glass block has been manufactured in modular sizes since the start of the business in the early 30's. The majority of block are 7¾-in. or 11¾-in. square face. These lay up in ¼-in. mortar joints so that they space in multiples of 4 in. Even the smaller 5¾-in. square block conforms when laid in pairs. The only deviation has been a 5- x 8-in. face block introduced to course and space with clay products of the same size.

Canadian Cement Production

PRODUCTION of cement in Canada during July was considerably higher than the previous month, but was off sharply from the corresponding month of last year, according to the Dominion Bureau of Statistics. Output in July amounted to 935,465 bbl., an increase of 13.3 percent over the total for June of 826,008 bbl. but a

decrease of 24.9 percent from the aggregate in August, 1942, of 1,245,588 bbl. During the first seven months of 1943, production totaled 4,717,109 bbl., an increase of 781,283 bbl. or 19.8 percent over the figure for the like 1942 period of 3,935,826 bbl.

Talc As a Fertilizer

CARL FIELD, president of the Northwest Talc & Magnesium Co., has demonstrated that it would be a good idea "to put talcum powder on your land if you want your crops to grow bigger and better." Mr. Field recently exhibited some field peas 7 ft. tall which were pulled out of a plot that had been fertilized with talc from his plant. He mentioned in a talk at Bellingham, Wash., numerous instances of almost phenomenal growths of different crops where this fertilizer was used. Although the price of the bagged talc is $15 a ton, this fertilizer has come into increasing demand in recent years.

Sand and Gravel Bids

HUNTINGTON, N. Y., recently called for bids to supply the city with sand and gravel for the six months beginning October 1. The Hugh Kelly Corporation bid was as follows: sand, 40c per cu. yd.; gravel, $1.35; grit, 60c; sand and grit, 75c, and bank run, 60c, all delivered from Farmingdale.

The Huntington Sand & Gravel Company's proposal follows: Washed screened sand, $1 per cu. yd., $1.50 delivered; washed stone, $1.50, delivered, $2; washed stone and gravel, $1.40, delivered, $1.90; three-fourths stone and gravel, $1.40, delivered, $1.90; grit, $1, delivered $1.50; sand and grit mixed, $1, delivered $1.50.

•

OMAHA, NEBRASKA: The county board recently awarded a contract to the Douglas County Gravel Co. for 7000 tons of gravel at $1.07 delivered to the roads in the Bennington-Irvington area. Lyman-Richey Sand and Gravel Co. bid $1.14 a ton, and Acme Sand and Gravel Co. bid $1.42 a ton.

•

LOUISIANA State Department of Highways has granted a contract to Bacon Gravel Co., Mer Rouge, La., for gravel to be spot dumped on 10 roads in the parish. Monroe Sand and Gravel Co. will furnish gravel for four projects, the gravel to be delivered by railroad at designated points.

Agstone Orders

D. F. BRUCE, county agriculture agent, Bibbs County, Georgia, has ordered 275,800 lb. of ground limestone and 100,000 lb. of calcium silicate slag to be used on the 13 county test demonstration farms. The ground limestone and slag will be used in connection with 107,200 lb. of 48 percent phosphate. Bibb County Marketing and Conservation Association also has approved the application of 37,200 lb. of ammonium nitrate to fall planted grain and permanent pasture lands.

Offers Quarry to City

THE BAY VIEW STONE CO., which has not operated for more than a year and a half, recently offered to convey to the city of Madison, Wis., its quarry west of the city limits and cancel a city obligation for stone furnished for park purposes several years ago in payment of delinquent taxes totaling $3038.

Large Expenditures for Post-War Road Repairs

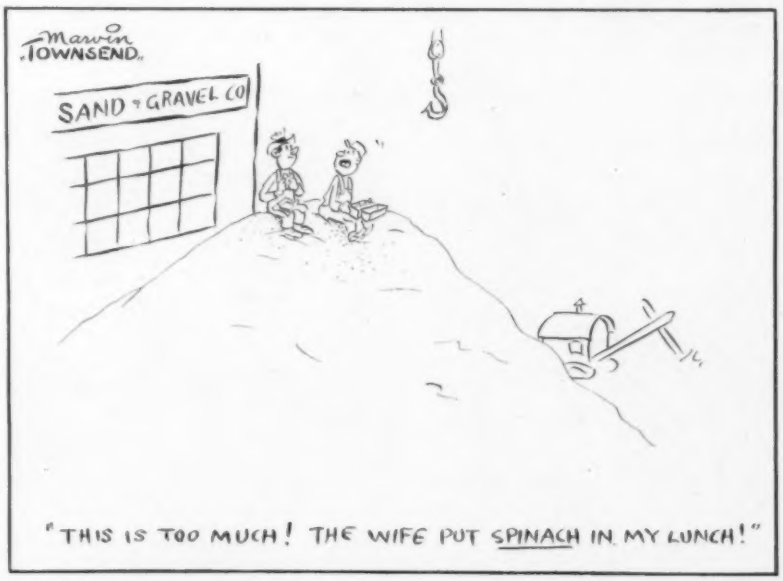
CHARLES M. UPHAM, director of the American Road Builders' Association, recently stated in a Chicago address that all highway agencies will have to double their normal construction and reconstruction programs in the post-war period, just to bring the highways back to their 1941 condition because of the great depreciation during wartime. Although the tire and gas shortage is reducing the amount of pleasure driving, this is more than offset on the most important highways by the increases in industrial hauling, from buses and by use of the roads for mechanized military traffic. A survey of Michigan corporations manufacturing war materials, made by the F.W.A., shows that 70 percent receive 50 percent or more of their incoming materials by truck and 38 percent receive 90 percent to 100 percent. In addition, 76 percent ship 50 percent or more of their finished products by truck and 43 percent ship 90 percent to 100 percent.

Mica Report on Preparation and Specifications

BUREAU OF MINES has issued a report, Information Circular 7258, "Strategic Mica," by Richards Gwinn, which covers physical properties, specifications, and preparations for marketing strategic mica. This report was published as an aid to producers in increasing the output of domestic mica for war. Marketed in a wide and confusing variety of grades and qualities, mica presents a complex price structure, ranging from a fraction of a cent a pound for low-grade material to more than $20 a pound for exceptionally large, flat, clear crystal sheets. Proper trimming, sizing, and classifying add greatly to the value of block mica, and an understanding of the many factors involved in marketing mica definitely is advantageous to mica miners.

Grinding Syenite at Peak

THE GREAT LAKES FOUNDRY SAND CO., Detroit, Mich., and the American Nepheline Corporation have been running their fine grinding units 24 hours a day to keep up with orders for pottery grade nepheline syenite.



FELDSPAR

Western Feldspar Milling Co. supplies large tonnage of ground feldspar and fluorspar for many war-stimulated industries

By RALPH S. TORGERSON

STARTING in the feldspar milling business in 1926, J. W. Magnuson, president of the Western Feldspar Milling Co., is one of the earliest and most important producers in the State of Colorado. Seven mining properties are in active operation throughout the State and others are held in reserve. Fluorspar also is processed. Mines ship by rail and truck to the mill in Denver.

This plant is exceptionally well-equipped for fine grinding, and has entirely replaced the original plant which started operations in 1926. With the glass container industry enjoying a boom in business due to restrictions on the use of metal cans, feldspar, an important constituent in the glass used in its manufacture, has come into increasing demand. It is also employed extensively in the pottery industry, and for sheet iron enamel and as a binder in abrasive wheels. Fluorspar has enjoyed a strong demand for the manufacture of hydrofluoric acid, for use as a flux in making fine open hearth steels, and in glass and enamel industries. All of these war-time demands have called for higher production at the Western Feldspar Milling Co. plant.

Grinding operations and screen meshes used at the mill are, of course, governed by the market which the product is to serve. The glass industry calls for 20- to 140-mesh. Enamel feldspar is a 140-mesh and finer product. Pottery feldspar is 200-mesh to 325-mesh product, depending on the grade desired.

The Western Feldspar Milling Co. has a convenient rail siding adjacent to the plant, but maintains a stockpile of feldspar and fluorspar of about 4000 tons as a contingency against delays in shipments from the mines. Most of the mining operations are open pits.

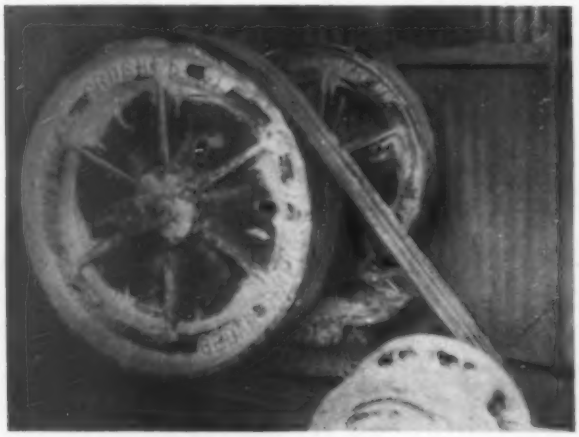
At the mill, rock from the cars is loaded into a bin feeding a No. 916 Universal primary jaw crusher which reduces the stone to 2- to 2½-in. top size. A No. 914 Universal primary jaw crusher is held in reserve to receive rock from the stockpile in case cars from the mine are not available. This

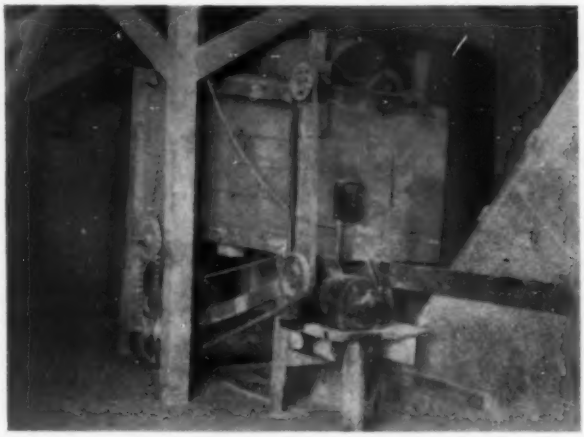
Three steel bins for finished products each have a capacity of 200 tons

reserve crusher is located near the stockpile and next to the secondary gyratory.

Throughs from the main primary crusher are moved by a 24-in. belt conveyor to a hopper feeding a No. 5 Allis-Chalmers Newhouse gyratory secondary crusher. From the Newhouse crusher, the product is elevated by a bucket elevator to a single trommel screen with ⅜-in. mesh. Throughs from this screen are again elevated by bucket elevator to the crude bin, and the oversize goes back to the Newhouse crusher by chute for recrushing.

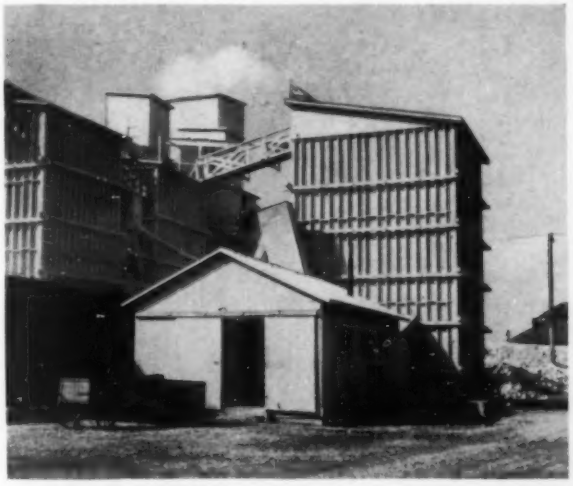
From compartments in the crude bin, the material is fed by gate-con-





Left: Primary jaw crusher which reduces rock to 2½ in. top size. product of the cone crushers. All dust is drawn to dust

Right: One of a number of 3 ft. trommel screens which take the collector at top of plant through enclosed pipes and chutes



Left: General view of feldspar and fluorspar milling plant. Right: Reserve stockpiles of feldspar and fluorspar

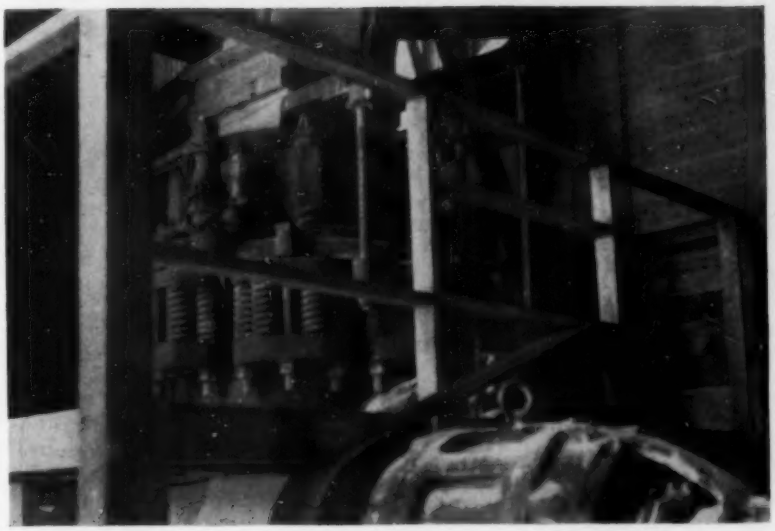
trolled chutes to five mills, depending upon the desired fineness of the product. Three of these mills are 5- x 8- ft. conical Hardinge ball mills and the other two are 5-ft. Symons cone crushers. The product of the Hardinge mills is taken by bucket elevator to the screen room where it is passed over three 3- x 8-ft. Simplicity vibrating screens, having a 20-mesh screen. Throughs go to a Gayco separator and the oversize goes back to the mills. Screw conveyors carry the product to finish bins which contain products 14-mesh and finer. Products of the two Nordberg-Symons cone crushers are fed by bucket elevators and chutes to six 3-ft. trommel screens with different cloth meshes to produce various gradations. Oversize goes back to the cone crushers for regrinding. Screws and bucket elevators carry the finished product to bins.

Nine wooden and steel bins for finished products have a capacity of 1800 tons. The three large steel finish bins with conical shaped bottoms, shown in one of the illustrations, each have a capacity of 200 tons, divided into two compartments. These bins, both steel and wooden, are all elevated sufficiently above ground level so that railroad box cars on parallel siding tracks may be conveniently loaded by means of flexible pipe chutes.

If conditions demand, by-pass chutes and slide gates in the screw conveyor lines permit taking the product directly from the screens to the cars. Plant capacity is approximately 100 cars of finished product per month.

A Norblo dust collector in the screen room keeps the dust nuisance

(Continued on page 102)



Above: One of three conical ball mills for fine grinding. Below: One of the two 5-ft. cone crushers

PRIZE OFFER
FOR
Maintenance HINTS and HELPS
For Publication in ROCK PRODUCTS

WAR

Requires **INGENUITY**

Requires **RESOURCEFULNESS**

Requires **CONSERVATION**

In the Use of Men Material and Equipment

PRIZES

One $100 War Savings Bond —First Prize
Two $50 War Savings Bonds—Two Next Best
Two $25 War Savings Bonds—Two Next Best
Five $10 in War Savings Stamps—Five Next Best

Space rates with a minimum of $5 each will be paid for all other Usable Hints and Helps accepted by the Editors.

RULES

1. Any reader of ROCK PRODUCTS actually engaged in a rock products operation may offer a contribution.
2. The manuscript may be typewritten or written long-hand, pencil or ink; spelling or grammar makes no difference—it is the usefulness or applicability of the idea or device as described that counts.
3. The manuscript should be accompanied by an illustration if possible. This may be a snapshot photo, pencil sketch, blueprint, etc.
4. The subject selected to be described may be any part of the operation—any phase of the production process. It may be on maintenance or repair of a piece of equipment or machinery; it may be a money-saving or maintenance idea on lubrication; an accident-prevention idea; a cost-keeping idea; a way of meeting labor or public relations problems—any subject made live by war conditions, or brought about largely by Ingenuity, Resourcefulness and Conservation as a result of war necessities.
5. In case of a tie for any of the prizes, duplicate prizes will be awarded to the persons tying.

JUDGES

The judges will be two prominent producers and the Editor-in-Chief of ROCK PRODUCTS.

Address all contributions and communications to

War Ingenuity Contest
ROCK PRODUCTS
309 West Jackson Blvd.
Chicago, Ill.

The contest is now open and closes on December 15, 1943. Prize winning HINTS and HELPS will be published in the January, 1944, issue and following issues.

Act Now!

World's Latest Cement Plant

Outstanding Features of the Northampton Operation of the Universal Atlas Cement Co.

Fig. 1: Plant from the elevation on which the flotation or cell house is located. General office building and plant laboratory in the near center. Kiln buildings with filter room near the right end is at the right. The housing to the stack provides for stack dust collection. Repair shop building behind the office building. Washhouse and locker house at the left of the shop building. Behind the kiln building at the right is the raw material storage building and at the left the raw and finish mill building for white cement

By NATHAN C. ROCKWOOD

THIS AND THE FOLLOWING articles are the result of a four-day inspection and minute examination of the new Northampton, Penn., plant of the Universal Atlas Cement Co. During those four days the writer had absolute freedom of the plant to wander around to his heart's content —a privilege believed to be accorded to very few visitors, not because there is any desire to hide, but because, after all, a visitor left to himself might get hurt. This would be true, certainly, of the ordinary cement plant, but it is difficult to see how any one could be injured in this particular plant.

Going about the plant, climbing stairs, descending into the pipe and electric cable tunnels, this matter of the utmost protection against possible injury was more and more impressive and without the necessity of warning signs, so common in most plants. As a matter of fact except for railway crossings, and where construction work was in progress, it is doubtful if many warning signs will ever be necessary, although standard practice may require them. There is no open electric wiring in the entire plant. This plant is also exceptional in its lighting—both natural and artificial, which is certainly a factor in accident prevention.

A Safe Clean Plant

Of course, there are the usual machine guards and safety railings on platforms and stairways. All these are of sturdy steel construction. However, the real safety factor, in the writer's opinion, is ample floor space. There is not a single piece of machinery that I could find where there was not ample space to walk completely around it without stooping, without having to step over something, and without encountering dripping oil or grease. Of course, the plant is not entirely dustless, but hat and clothes acquired very little dust and no grease, which will be welcome news to visitors, and is perhaps as graphic a description of the plant as could be written for men familiar with cement plants.

The huge 624- x 100-ft. raw material and clinker storage building at this plant occupies a very strategic location, as one can see from the general plan. It backs up (longitudinally) with both the mill building on one end and the kiln discharge end of the kiln building on the other end. This certainly simplifies material handling as will be described in following articles.

The flotation and classifying operation looks complicated, but when the main scheme is grasped it is essentially simple. The flotation plant, or cell house, including the centrifugal classifiers, may be considered to all intents and purposes, a limestone quarry, where by simple manipulation, limestone of almost any degree of purity may be "mined," or where as much or as little of the silicate impurities may be saved or wasted. The flotation processing is described in detail elsewhere.

The raw grinding plant is the fruition of the experience and study of the company over many years. It has the same kind of equipment and closed-circuit classifying devices as at the Leeds, Ala., plant, described in detail by C. D. Rugen, then as-

(Continued on page 48)

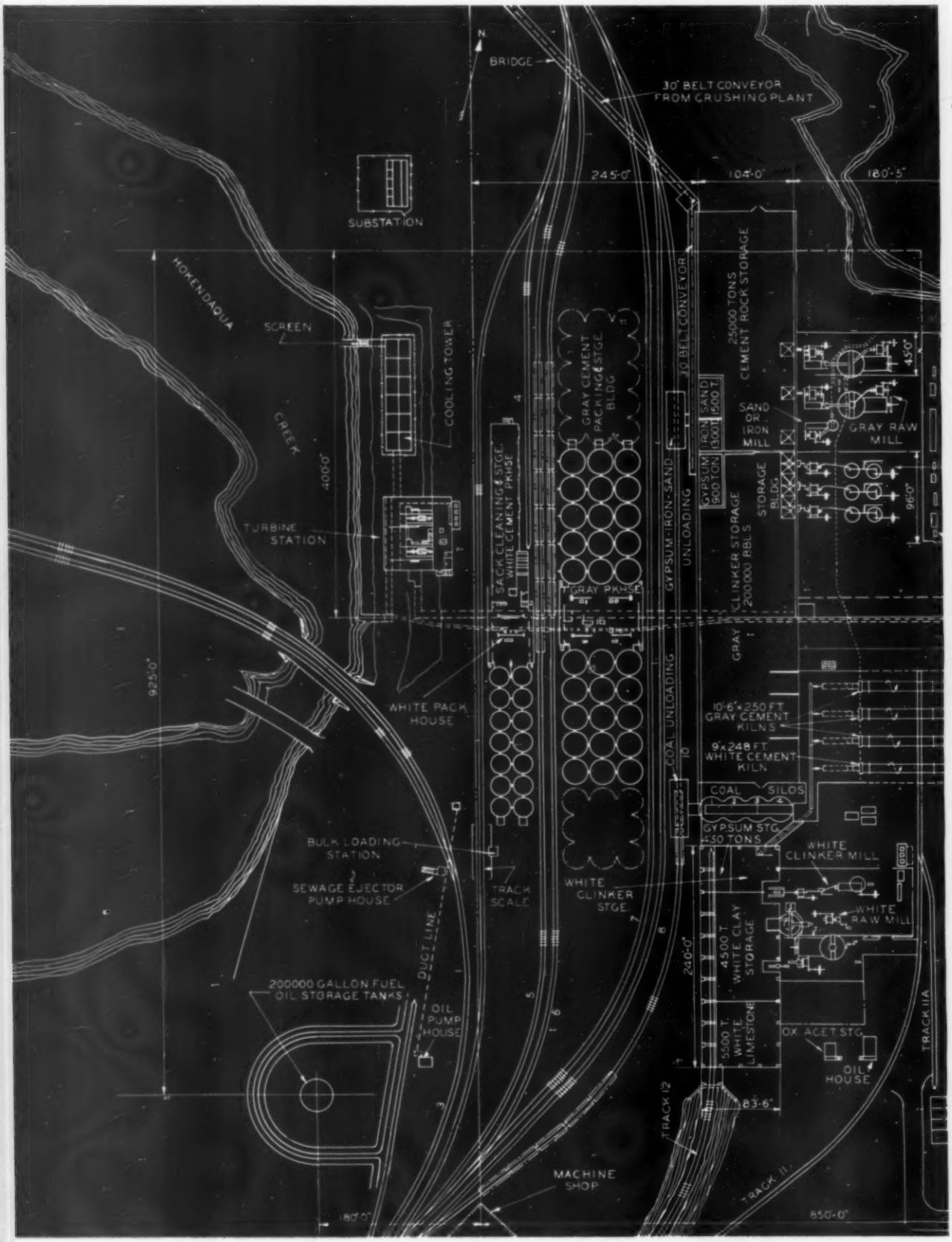
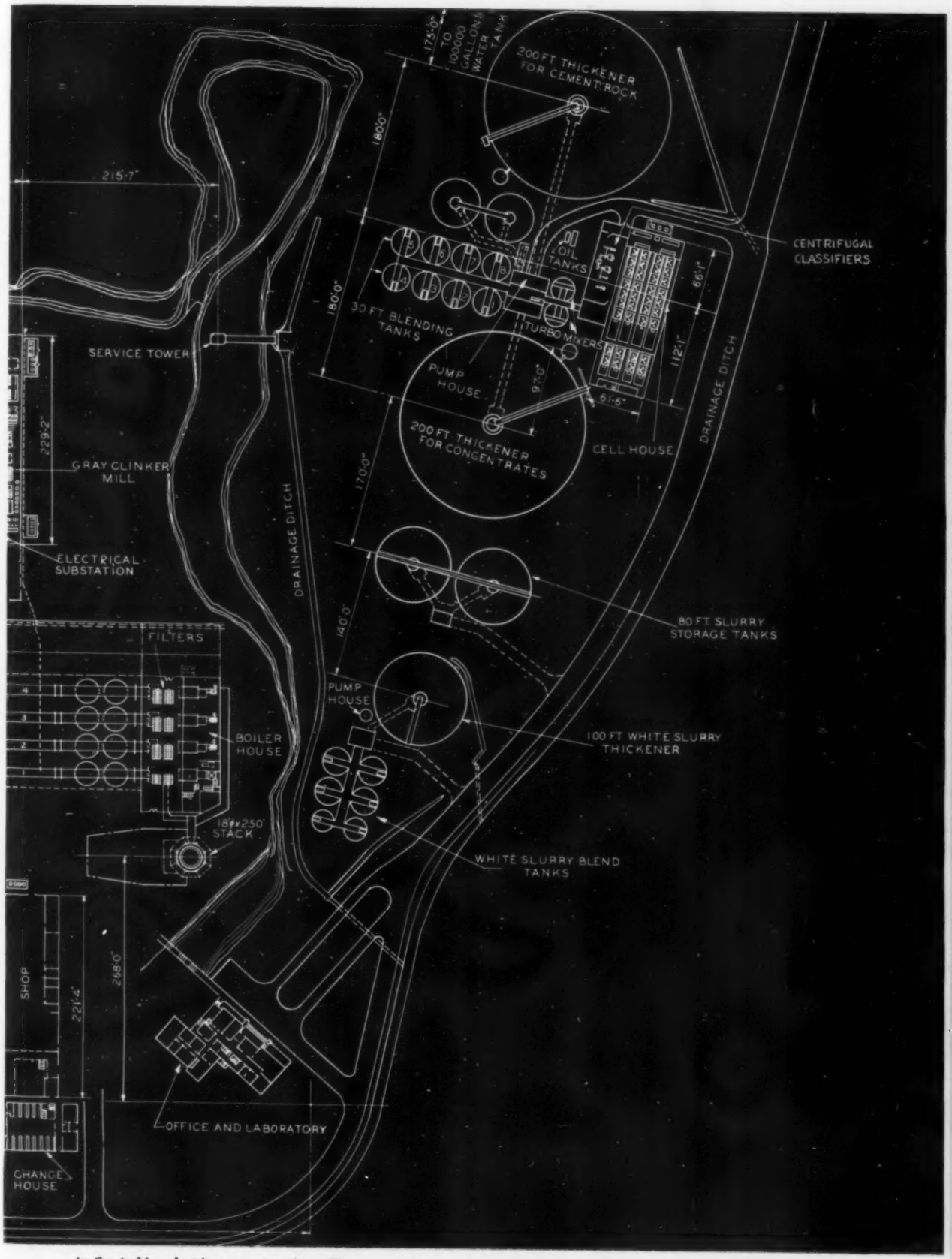


Fig. 2: General plan of the Northampton, Penn., plant of the Universal Atlast Cement Co. Note the distance from the waste-heat boilers



to the turbine-electric generator plant. The power plant and power transmission system will be described in another issue

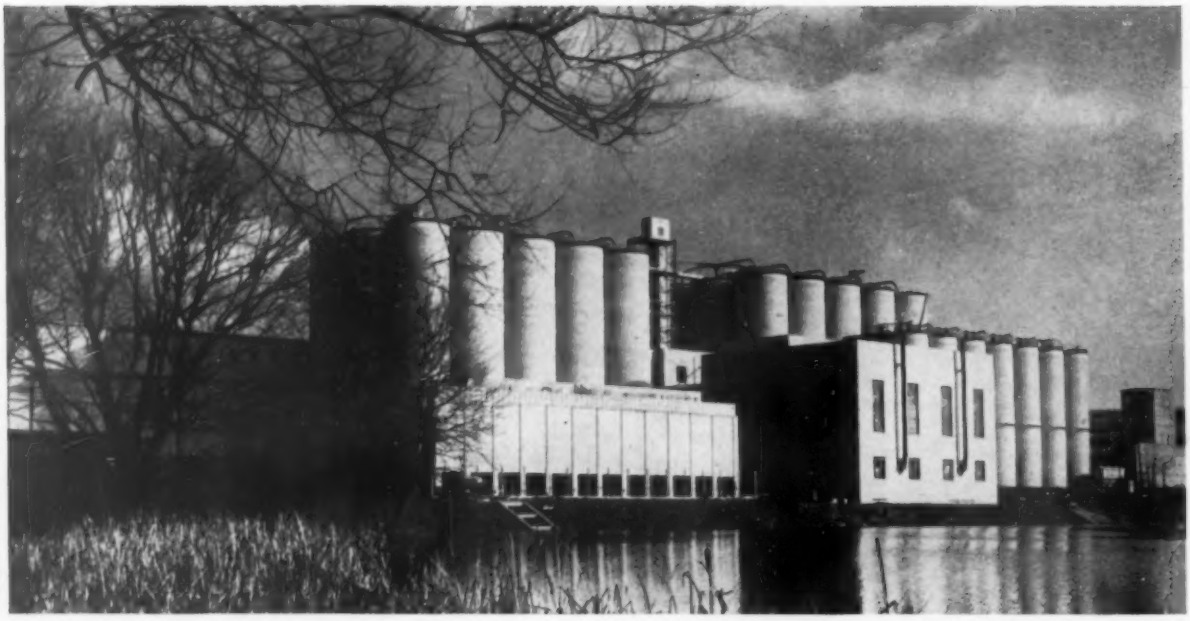


Fig. 3: Plant from across the creek which furnishes water for condensers in turbine-electric generator plant in the right foreground. White cement silos at the right. Two banks of 15 silos each, with top of pack houses between (behind the power plant). Condenser water cooler in the foreground to left of power plant. Part of the raw material storage building behind the silos. The steam lines from the waste-heat boilers run in concrete tunnel below pack houses and raw material storage to the power house. Power cables from the power house are on racks in the same tunnel, which also carries a water main for processing plants and cement pump line. Water pumps are in lower part of the power house

(Continued from page 45)

sistant operating engineer of the company, in ROCK PRODUCTS, March and April, 1939. The clinker grinding scheme here is somewhat simplified over the Leeds plant, as is described elsewhere in the article on the grinding plant. For the philosophy behind these grinding layouts the reader is referred to a series of two articles by C. D. Rugen, J. A. Kivert and R. E. Boehler, of the Universal Atlas Cement Co., in the March and April issues of ROCK PRODUCTS, 1940. There are some novel features in the grinding plant, which are illustrated farther on.

The clinker burning part of the plant is fascinating in the completeness of the control equipment, and general neatness. The clinker coolers (of the air-quenching type) and the bases of the unit coal mills are at ground level and readily accessible. That means that the kilns are so high above ground level that the heat from them is hardly perceptible in passing under them. The kilns are fed filter cake by a type of pump hitherto used only for concrete, and there are other interesting features described elsewhere.

Two Distinct Plants in One

The pack houses are really things of beauty both inside and out. I say "pack houses," because there are two separate and distinct plants here, one for white cement, which has its own separate raw and final grinding mills in a separate building, separate thickener, blending tanks, etc. Only the kiln is not separated from the others. The white cement is made of materials brought in from the outside, as the amount of iron in the native rock is too high. So there is a packing plant for the ordinary varieties of portland cements and one for white cement. Dust collection in the packing plants has been carried about as far as possible.

The waste-heat power plant is chiefly remarkable for two things. The boilers are 700 or 800 ft. removed from the turbine generators, and each kiln and boiler is a separate unit. The reasons for these features are explained in the succeeding article on the power plant and power circuits.

Editor's Note

• ***Space limitations in this issue prevent inclusion of the "chapter" on the power plant and power controls. This will follow in a subsequent issue.—The Editor.***

An outstanding feature is that everything that goes into the plant from coal to rock is measured by weighing or other measuring and recording devices. No plant probably has an equal opportunity to make an accurate material balance, which chemists often speak of as the only logical way to approach cost analyses. There must be about 30 weighing devices on the raw materials and clinker conveyors alone.

The visitor is impressed with the amount and variety of electrical control devices; some may think there are too many gadgets, but all these enter the picture of more accurate control of processing so long sought for in cement manufacture.

One hears considerable comment about the size of the investment in this plant. In regard to this two things should be borne in mind: (1) The plant is designed for future cements, and not merely for a return of the five pre-war standards. It is designed to make any kind of portland cement particular or peculiar users may think up in the future. (2) Reduced to a per barrel of capacity investment the figures are really not far out of line with what any new portland cement plant would cost at the present time. The casual visitor might also draw the conclusion that

(Continued on page 83)

PROCESSING SIMPLIFIES QUARRY OPERATIONS

FROM A HILLSIDE QUARRYING operation, removal of millions of tons of cement rock has converted the present quarry of the Northampton plant of the Universal Atlas Cement Co. into a deep hole, where the new quarry floor is some 50 to 60 ft. below natural drainage level. This will make the ultimate quarry floor considerably below the crushing plant level and the present system of haulage by dump cars and steam locomotives on standard-gauge track will be replaced by gasoline-powered rubber-tired tractors and 10-cu. yd. semi-trailers, hauled up a 10 percent incline by electric hoists and barney cars, after the method used by the New York Trap Rock Co. at its Haverstraw, N. Y., plant and described by J. Q. Taylor, general superintendent of the company, in ROCK PRODUCTS, January, 1943.

The quarry is drilled in 40-ft. faces with electric-powered well drills using 6-in. bits. A blacksmith shop near the crusher building is equipped with a bit sharpener. The excavation is done with three 2½-cu. yd. electric-powered shovels. The main power control for the quarry equipment is on the switch board of the electric power control house alongside the mill building.

The cement rock in the quarry varies in analysis from 68 to 76 percent $CaCO_3$. Most of it is dark slate colored, but there are occasional bands of white, which are usually mixtures of fairly pure calcite and quartz. Since a satisfactory limestone for present-day portland cements requires approximately 75.5 percent $CaCO_3$, it can be seen that the plant chemist had an extremely narrow margin to work with. He had to oversee quarry operation with extreme caution, merely to maintain the minimum $CaCO_3$ content. Also, the silica and alumina are in the form of silicates, very hard to separate, and the proportion of alumina to silica was too great, that is, the silica: alumina ratio was too low for low heat or for sulphate resisting portland cements.

The problem presented was therefore one of importing a purer limestone or making a purer limestone by processing. Since it isn't feasible to separate the silica from the alumina in the flotation rejects, the silica lost with rejects has to be replaced by ground local sand. However, this has its advantage, since the silica ratio may be adjusted as readily as the $CaCO_3$ percentage. Provision is made for adding iron oxide in the same manner, when the specifications require this in place of some of the alumina, as for low heat cement.

By processing a part of the normal grind of quarry rock, it is possible to get limestone concentrates with 80 to 86 percent $CaCO_3$. The processing plant then becomes in effect a high calcium limestone quarry. The chemist now is mainly concerned to see that his tanks of slurry for blending contain enough high calcium slurry to meet the requirements of any of the natural rock slurries being used.

Fig. 3: General view of the quarry showing the various levels that have been worked out. Limestone at the left is the old level; the new 40-ft. cut is being made in the center. Temporary pump house is shown in the right center. The haulage equipment shown will be replaced as soon as possible with gasoline-driven, rubber-tired tractors and semi-trailers.

Simple Two-Stage Crushing

Primary crusher with hammer mill and screens in closed circuit

THE PRIMARY AND SECONDARY crushing units of the Universal Atlas Cement Co.'s new Northampton, Penn., plant are models of simplicity. The railway cars (and subsequently the truck semi-trailers) dump into a hopper, feeding an apron or pan-conveyor to a 36-in. x 60-in. Fairmont roll crusher (a single slugger roll). The whole operation of car dumping, feeding the conveyor and stopping of the units is controlled by a single operator on a platform over the crusher opening facing the receiving hopper, as shown in Fig. 5. He can stop and start the feeder to avoid choking the crusher.

The crusher is driven by a 300-hp. 440-volt a-c. motor at 48 r.p.m., current being supplied to the transformer near the crusher at 2300-v. from one of the switch boards in the main power control (substation) building. Push-button switches on the crusher platform will stop the crusher and feeder, but the main unit, the crusher, can not be started again except in proper sequence and on signal to the main control room.

The crusher product is minus 8-in. This product is conveyed to a separate building housing the secondary crushing machinery by a 36-in. belt conveyor, partly in concrete tunnel and partly on a steel trestle, at an incline of 18 deg. which is the maximum for all conveyor belts in this plant.

The first step in secondary crushing is to screen out, on two double-deck, inclined, vibrating screens, 5 x 10 ft., all the minus ¾-in. stone, which is the finished product. The top decks of the screens are 2-in. square mesh made of ⅝-in. rods. The lower deck is ¾-in. mesh screen and the sole object of the top deck is to protect the ¾-in. screen and increase its efficiency by pulling out the plus 2-in stone. Rejects of both screen surfaces go to the reversible hammermill below, at the ground floor level.

The vibrating screens are close-circuited with the hammermill by having the hammermill discharge conveyed part way back and discharged on the 36-in. belt conveyor feeding the vibrating screens' hopper. An inclined 30-in. belt conveyor does this job, the belts' intersection being housed in a separate structure between the primary crusher building and the secondary crusher building. The minus ¾-in. product is chuted from the screens to a 30-in. conveyor belt, hooded with a dust collector intake. The vibrating screens are entirely enclosed and similarly connected to the same dust collector, over the screen room. The dust collected is fed to the conveyor belt ahead of the ¾-in. stone, to protect the feed chute and the belt from excessive abrasion (Fig. 6).

Fig. 5: Car-dump hopper and pan feeder to primary crusher, below the control platform. Push-button switches at the left. Air valve controls in the center for operating the compressed air car-dump hoist. The hopper is lined with railroad rails, heads up, filled in with concrete. A bridge crane overhead services all machinery

Interlocking Controls

The reversible hammermill has a capacity of 425 tons per hour and is driven by a 600-hp. 440-volt a-c. motor at 720 r.p.m., with current supplied from the main power control room at 2300 v. through the crushing plant transformer. Like all the major units in the plant, the hammermill may be stopped with a push button, but not started again except from the main control board and in proper sequence through interlocking switches. In other words the belt conveyor from the mill and the screens must be started first.

Near the feed end of the 30-in. conveyor carrying the ¾-in. stone and dust is a weight recording machine, the first of many, of three different types, which make possible a complete record of all raw materials and coal going into the processing.

The 30-in. belt discharges through a movable tripper to any of several compartments in a storage building 624 ft. long by 100 ft. wide. The concrete counterforts which partly separate the floor space into bins or

Fig. 6: View from the storage building looking toward the secondary crusher building, the transfer house and the primary crusher building before this building had been completed

compartments also support the steel columns and girders for two traveling bridge cranes, one for stone and the other for clinker and gypsum. The storage space in the building is roughly divided evenly between stone and clinker, with small compartments or bins on one side for sand, iron ore, and gypsum.

The iron ore, sand and gypsum are normally received in hopper bottom cars and are taken to their respective bins by bucket elevator and belt conveyor, but gypsum is sometimes received in box cars, and a scraper

Fig. 7: Reversible hammermill which reduces minus 8-in. primary crusher product to minus ¾-in. Chute in upper right-hand corner carries the screen throughs to the belt conveyor shown in Fig. 8

Fig. 8: Feeder for 30-in. conveyor belt to stone storage. Note pipe (left) for dust from collector and dust collector intake at right in the illustration

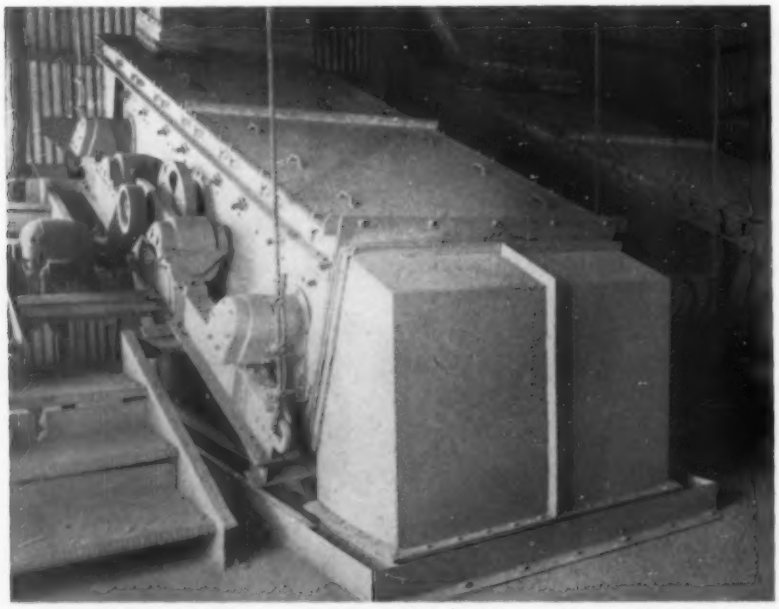


Fig. 9: The scalping screens which are close-circuited with the hammermill, completely housed and connected with dust collector

bucket car unloader, powered by an electric hoist through remote control is used to feed the gypsum to the elevator hopper. The hoist itself is on the platform which runs along the side of stone conveyor.

It will be seen that stone of different $CaCO_3$ analysis can be kept segregated, and various kinds of cement clinker may be kept segregated.

The storage building is along side the mill building and the traveling bridge cranes with 5-cu. yd. clamshell buckets recover the crushed stone and clinker and feed the mill hoppers above each grinding unit. The cranes operate on 220-v. d-c. supplied by motor-generator units in the main power control room.

The main emphasis on the crushing operation is that the stone fed to the mills is all minus ¾-in. and possibly 50 percent of it is minus ⅜-in. We believe this is finer than the average raw materials fed to preliminary ball mills, and undoubtedly

(Continued on page 85)

Fig. 10: Raw material and clinker storage building; served by overhead bridge cranes and clam shells, which deposit materials directly in mill feed hoppers

Separate Grinding of Cement Rock, Sand and Iron Ore

Closed-circuit clinker finish grinding

THE GRINDING UNITS of the new Northampton plant of the Universal Atlas Cement Co., with the exception of those for Atlas white cement, are all housed in one building. As in the Leeds, Ala., plant, the processing here has gotten away from long compartment mills on both the raw and finish ends.

Since the raw grinding scheme is identical with that at the Leeds plant, which was described in detail in the March and April issues of ROCK PRODUCTS, 1939, it is unnecessary to repeat the description in detail. There are, as at the Leeds plant, two rows of feed bins, feeders, short primary ball mills, rake classifiers close-circuited with these to return the oversize and pass the overflow to bowl classifiers, which float off the finished grind and feed the under grind, or sands, to the secondary ball mill. The secondary mill product returns to the bowl classifier, for the same circuit.

These units have only one product to grind, the raw rock, so the feeding arrangement is simpler than at Leeds. The feed of each mill is weight controlled as it goes into the primary ball mill, and the water added, of course, is measured. The water, incidentally, comes mostly from the slurry thickeners and is thus retained in a closed circuit which encompasses the entire processing operation. No raw material, including also most of the reagents used in the flotation plant, are lost from the system except by design—at least in theory.

One innovation at this raw grinding plant, as compared with the Leeds plant, is that an entirely separate and smaller raw grinding and classification unit is supplied to grind sand or iron ore. Reference to the Leeds flow-sheet will show that iron ore, sandstone, shale and limestone are there proportioned dry and fed together in combination to the primary ball mill. The Northampton flow-sheet by providing for entirely separate and distinct processing of sand and/or iron ore, or any other raw material, including separate thickeners and separate blending tanks, gives the plant chemist a sand slurry or an iron ore slurry which he can combine with any of the limstone slurries in any proportions called for.

Fig. 12: Finish mill on the left, cement pump fed by screw conveyor with air separator product. On the right are two rotary air compressors for cement pumps. Note headroom, clearway and service crane, which travels at right angles to the corridor shown

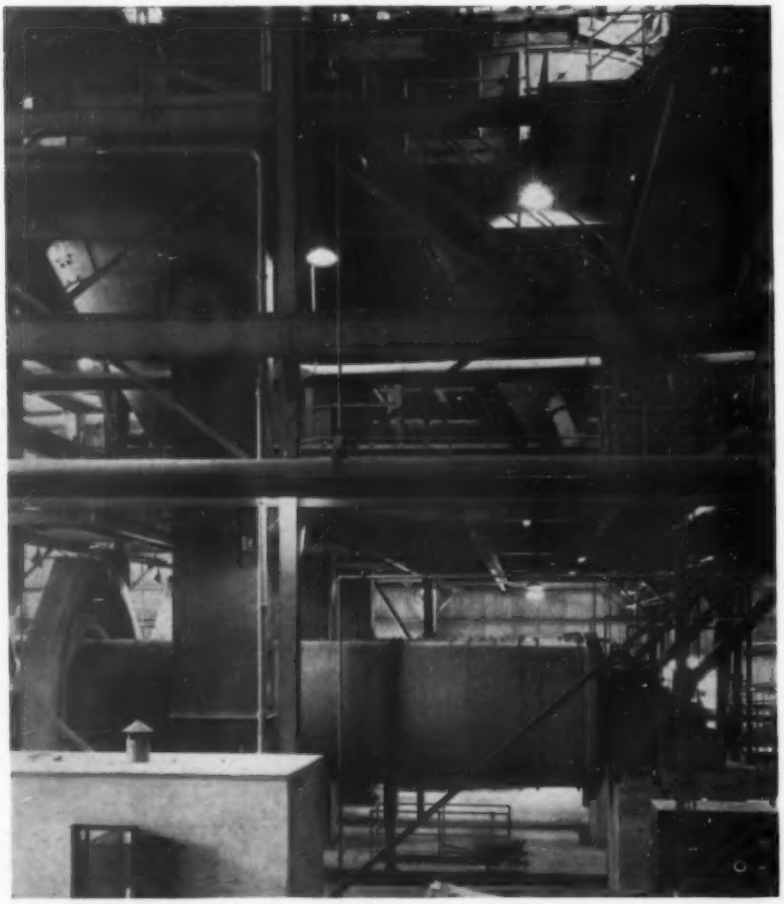


Fig. 13: The two-compartment clinker finish grinding mills with air separators above. These are end discharge 8 ft. diameter by 30 ft. long driven by 860 h.p. 2300-v. 60-cycle synchronous motors. They are charged, first compartment with 1¼-in. balls and second compartment with ⅞-in. balls. Preceding these compartment mills, to the right in the picture, are preliminary ball mills, 9 ft. 6 in. diameter by 8 ft. 8 in. long driven by 400-hp. 2300-v. 60-cycle synchronous motors. Corner of mill office and laboratory below, to left

This is getting pretty close to the dream of all cement plant chemists where by turning valves and mixing slurries of all the different portland cement ingredients he can send to the kilns a raw material accurately proportioned and blended for any kind of cement specified by chemical or mineralogical composition.

Another innovation at the Northampton plant is the use of sand wheels to elevate the bowl classifier sands to feed the finish ball mills by gravity. These sand wheel elevators are an old mining machinery device, but their first use in the cement industry is believed to be at the Leeds plant.

As stated in the introductory article the white cement raw materials are ground in a separate mill building but with grinding and classifying units of the same character. There is a special device to mix the raw materials before being fed to the primary ball mill, but from there on the processing parallels that for the ordinary varieties of cement.

A wide range of control of the raw grind is possible by changing speed of the rakes in the rake classifier and the amount of water fed to the bowl classifier and the speeds of its stirring and collecting rakes. Perhaps more than average fine grinding of raw materials is required for the successful flotation processing of this rock. Presumably this is the governing consideration in the grinding process as conducted.

Clinker Grinding

We will depart from the normal sequence of the processing to describe the finish grinding department since both raw and finish mills are in the same mill building and seen by the visitor at the same time. As at the Leeds plant the finish mills have but two compartments. However, they are end-discharge instead of center discharge. They are preceded by short ball mills as preliminary grinders. Recording weighing devices proportion the clinker and gypsum. The product of the preliminary ball mill is fed direct to the first compartment of the two-compartment mill and the discharge from the second compartment is elevated to air separators, the over-size being returned to the first compartment, for the complete circuit through the entire mill and separator. The air separators are so connected that they may send the over-size back to the preliminary ball mill, thus insuring the finest possible grinding.

The impressive things about the mill department are the headroom and the overhead bridge cranes for servicing all equipment.

Ingenious "Inching" Device

The finish mill controls are on switch boards between the prelim-

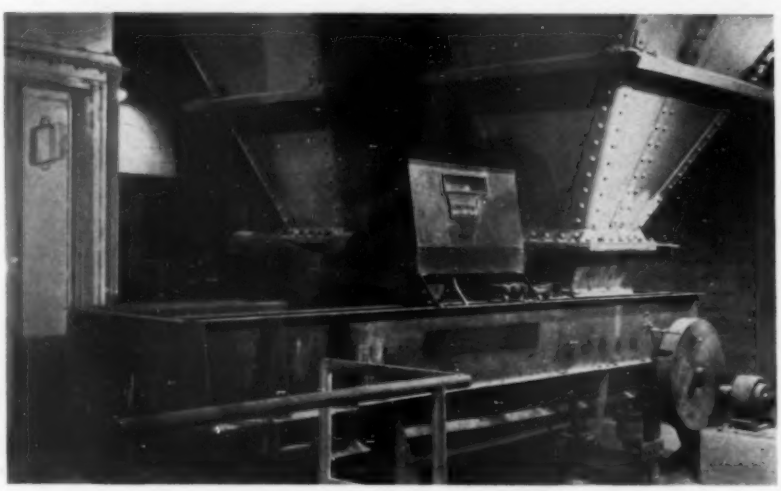


Fig. 14: Weighing feeder controls the clinker and gypsum fed to preliminary mill. Same type of weighing feeder is used for raw material feed to mills

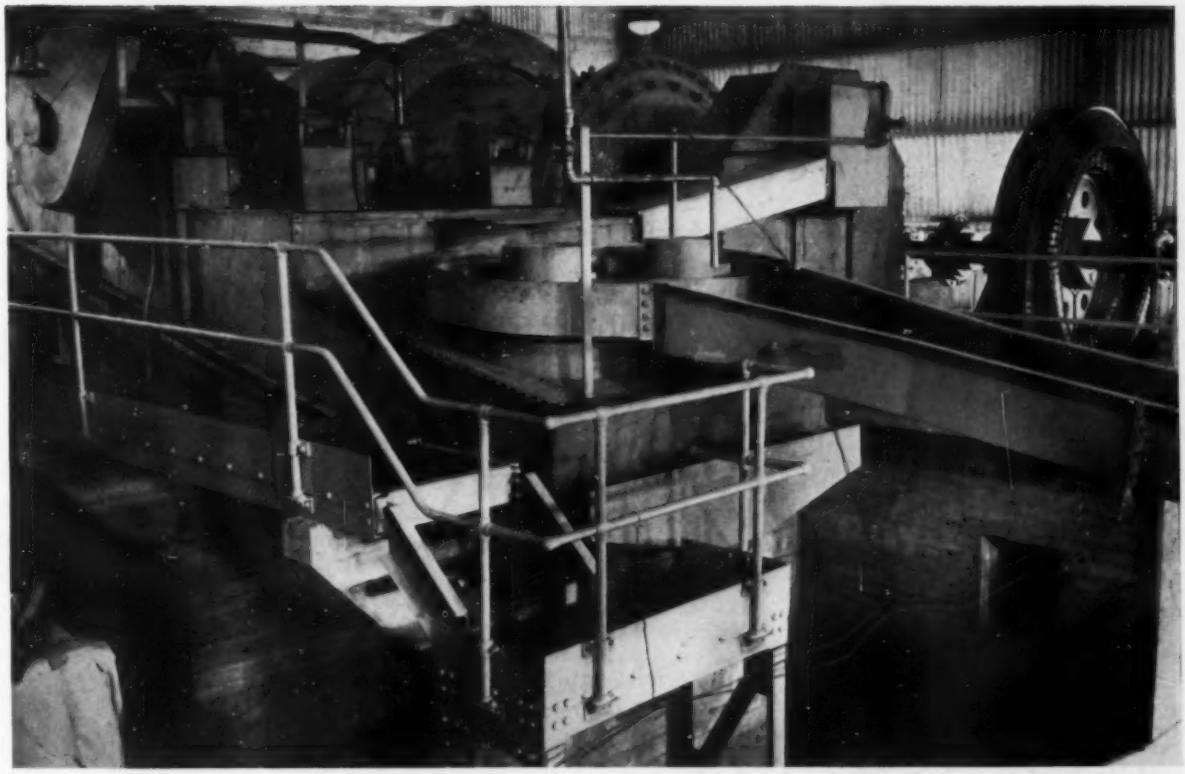


Fig. 15: One of the primary raw ball mills, 9 ft. 6 in. diameter by 8 ft. 8 in. long, loaded with 2 in. to 3 in. balls. Driven by 350-hp. 2300-v. 60-cycle synchronous motor. To left of mill is multizone rake classifier. The discharge of the mill is elevated by sand wheel (in enclosure between motor and mill) to feed rake classifier by gravity. The coarse material is raked up the incline and feeds back into the mill by gravity. The rake classifier overflow goes down the flume at the right to the bowl classifier (Fig. 16)

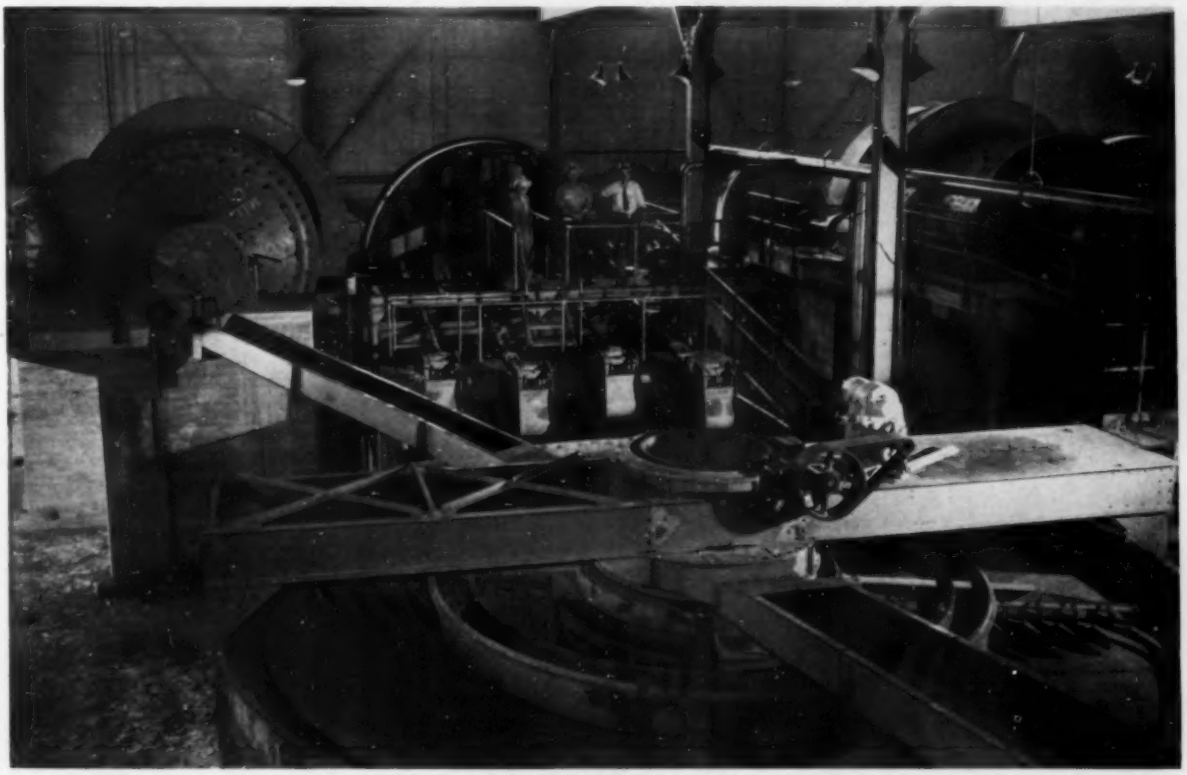


Fig. 16: Looking in the opposite direction from Fig. 15. This shows the bowl classifier in the foreground and the secondary or finish grind raw mills, which are also 9 ft. 6 in. diameter by 8 ft. 8 in. long, loaded with ⅞ in. to 1½ in. balls. Sand wheel feeding back the under grind is shown back of the three men. Same kind of motor drives. The overflow of the bowl classifier is slurry for thickener. A 10-in. centrifugal pump handles the overflow of both bowl classifiers. This bowl classifier slurry contains 85 to 87 percent water

Fig. 17: Mill control board, between preliminary mill and compartment mill. Feeder drive for finish mill seen above. This board carries speed controls for feeders and switches for all auxiliary machinery. Push buttons will stop the mills, but they can be started only from the main control room, where the starting switch is interlocked so that the cement pump, the screw feed from the air separators, etc., must be started first

inary and finish mills, as shown in one of the views herewith. This gives an idea of the headroom under the compartment mills themselves. Also, something entirely new can be found in this mill building—what is known as an "inching" device. Connected with each ball and compartment mill is a switch board for controlling an ordinary electric welding machine. By means of a cam-operated switch and a rheostat an "artificial" alternating current is created from the low voltage, high amperage direct current, with a very slow cycle (some 60 times longer than the normal cycle for the 60-cycle synchronous motors driving the mills). This slow cycle current is sent through the stators of the synchronous motors at about the same amperage they normally operate on, which permits turning the motors very slowly ("inching" them around) so that the mill manhole for discharging the ball load may be brought into position in minutes as compared with hours in the ordinary plant.

Another interesting thing in the mill department is a little building within the building, on the floor of the mill building itself, which contains an office for the mill superintendent and washroom and toilet facilities for the mill force. For a mill building this one is unusually quiet, presumably because it has so much headroom; within the little office building there is neither noise or dust.

The mechanical details in regard to the mills, drives, etc., are given in the captions under the illustrations.

California Lime Output

OUTPUT of lime in California during 1942 amounted to 98,548 tons, valued at $961,803, and came from two plants each in El Dorado and San Bernadino counties and one each in Alameda, Santa Cruz, and Tuolumne counties, according to a California Division of Mines report. The above figures showed a decrease in both amount and value from the 1941 production which was 110,719 tons, worth $996,514. These figures include mainly only such lime as is used in building operations.

Preventing Mine and Mill Fires

BASIC PRINCIPLES of preventing fires in surface mining and milling structures are explained in a new publication of the Bureau of Mines. Among many other suggestions, the bulletin points out that many disastrous fires have resulted from poor housekeeping, lack of fire-resistant storage facilities for flammable materials, and "first-aid" fire-fighting equipment; inadequate water supply and distributing system, absence of a well-organized and properly trained employe fire brigade, lack of fireproof barriers in wooden buildings to localize fires, few if any precautions during cutting and welding operations, improperly installed electric wiring and poorly insulated heating stoves. The publication, I.C. 7250, "Fires in Surface Mining and Milling Structures," by D. Harrington and J. H. East, Jr., may be obtained from the Bureau of Mines, Department of the Interior, Washington 25, D. C.

Stone Sand Specification for Fontana Dam

ADDITIONAL INFORMATION on the official specification for finished stone sand for the T.V.A. Fontana Dam, not appearing with the article entitled, "Span River with Belt Conveyors for Fontana Dam Aggregates," ROCK PRODUCTS, September, 1943, pp. 49-57, is given below in response to inquiries:

"Manufactured sand shall be furnished in one grading, which shall be well graded within limits by weight passing A.S.T.M. standard laboratory sieves as follows:

Size of Sieve	Percentage Passing
No. 4	95-100
8	75-90
16	50-70
30	30-50
50	15-30
100	8-13
200	Not more than 60% of —100 M

"Manufactured sand shall have a fineness modulus of not less than 2.3 nor more than 3.2."

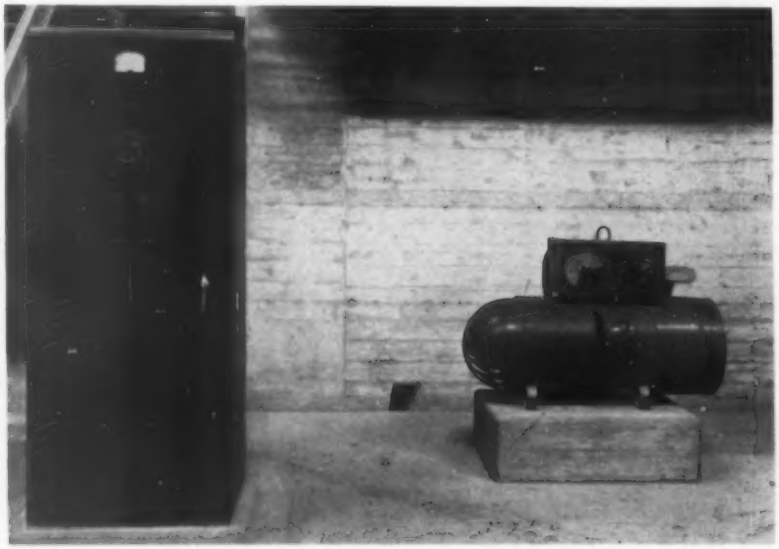


Fig. 18: The "inching" device with control box for spotting the manholes of mills so the balls may be discharged; this is explained in the text

The Ten Vital Rules for Wire Rope Care

1. Select the size, grade and construction of wire rope best suited for your equipment. If in doubt, we will help you make the selection.
2. When wire rope is installed, unreel or uncoil correctly to avoid putting twists into the rope.
3. Do not apply full load to a new wire rope. After a new rope is installed, operate the equipment with minimum load for a few cycles.
4. Do not overload your wire rope. Avoid shock loads by applying power uniformly.
5. Lubricate your wire rope at regular intervals. Wire rope is a machine, composed of many working parts. When operating around sheaves and drums it requires lubrication to reduce frictional wear. Periodic lubrication also prevents corrosion.
6. When not in use, wire rope should be stored in a dry place, protected from weather and acid fumes. Relubricate if temporarily removed from service.
7. Inspect your sheaves and drums. When these are worn so that new rope will not seat with proper clearance, they should be regrooved or replaced. Pinching in the grooves will ruin a wire rope.
8. Check the alignment of sheaves. Avoid unnecessary rope wear against flanges of sheaves.
9. Avoid cross winding on drums. And as far as possible, avoid over-winding.
10. Inspect your wire rope, end fastenings and equipment at regular intervals. Look for signs of unusual rope wear and abuse, and remove the cause. If caught in time, this means increased service.

Send for Free Wall Chart and Booklet

These ten rules are outlined and illustrated on an attractive wall chart, 15 in. by 21 in., printed in color and mounted on heavy cardboard. Send for a copy to be placed for ready reference where wire rope is being used.

Every user of wire rope can get a lot of good ideas from this book, "Valuable Facts". It's packed with easy-to-follow instructions that will help you avoid common errors of handling and care that shorten rope life. Order as many copies as you need.

What every wire rope user should know

THE well-tested rules for wire rope care are simple. The only difficult thing about them is to get your operators to follow them consistently—under all conditions. That's especially important right now when your ropes are being worked harder and for longer periods than ever before.

There is nothing delicate about U·S·S American Tiger Brand Wire Rope. It has strength, toughness and long life built into it. Its flexibility, its resistance to kinking and snarling, the fact that it is relaxed and inert makes Tiger Brand Excellay Preformed always easy to handle. But like any other good product, Tiger Brand needs good care—and must have it—if you want your rope to perform efficiently and last as long as it should.

So this year, make doubly sure that your operators understand that wire rope supplies are not unlimited, and that every care must be taken to make rope last as long as possible. It's common sense anytime—today it is a patriotic duty.

AMERICAN STEEL & WIRE COMPANY
Cleveland, Chicago and New York
COLUMBIA STEEL COMPANY
San Francisco
United States Steel Export Company, New York

Excellay Preformed

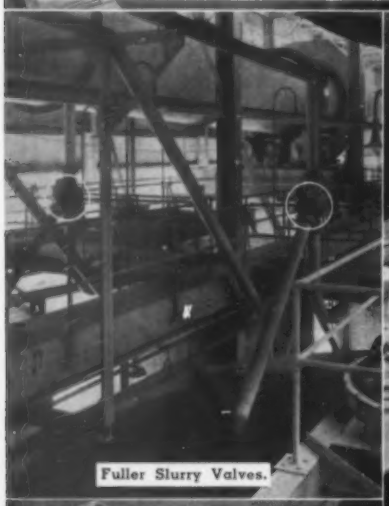
UNITED STATES STEEL

EQUIPMENT AT FULLER

The Airveyor conveying anthracite culm to boiler room.

Bulk car loading.

Fuller Rotary Vacuum Pumps for slurry filters.



Fuller Slurry Valves.

Partial view, top of storage silos, showing Fuller-Kinyon transport lines and diverting valves.

Rotary Gate Valves in tunnel underneath silos.

Fuller Air-Quenching Inclined-Grate Cooler.

Fuller Rotary Compressor furnishing air for Fuller-Kinyon System.

UNIVERSAL ATLAS

We point with pardonable pride to the fact that much Fuller equipment was selected and installed in the new plant of the Universal Atlas Cement Company at Northampton, Pa., equipment that contributes in a large measure in making it, not only most modern and up-to-date, but which will serve them for many years in the efficient operation of this plant.

FULLER COMPANY, CATASAUQUA, PA.

CHICAGO 3, Marquette Bldg. SAN FRANCISCO 4, Chancery Bldg.
WASHINGTON 5, D. C., Colorado Bldg.

MAJOR EQUIPMENT INSTALLED

Fuller-Kinyon Systems for conveying cement to storage silos and from storage to packer bins, both gray and white cements. Bulk car loading. Also conveying flue dust.

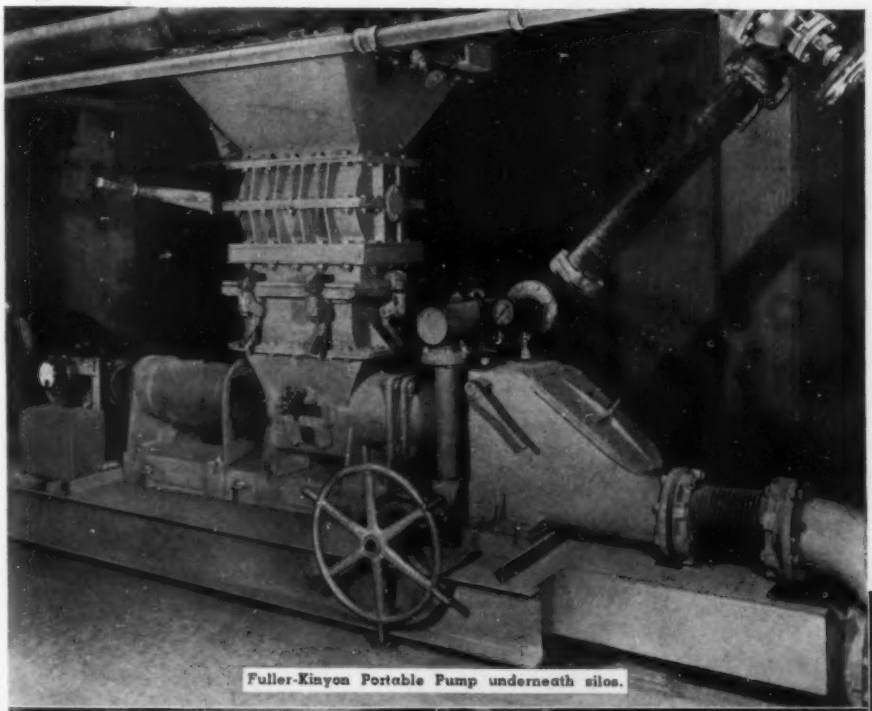
The Airveyor for conveying anthracite culm from storage to boiler room.

Fuller Air-Quenching Inclined-Grate Cooler.

Fuller Rotary Compressors, furnishing air for Fuller-Kinyon Conveying Systems and slurry agitation.

Fuller Rotary Vacuum Pumps for slurry filters.

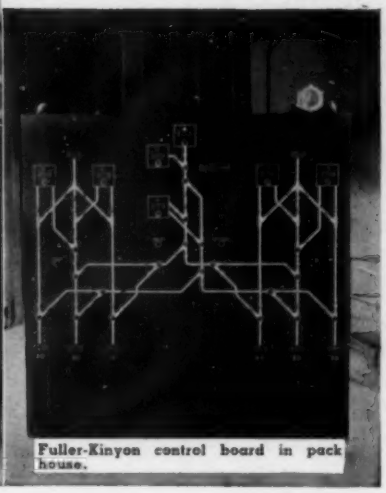
G-36T



Fuller-Kinyon Portable Pump underneath silos.

Fuller-Kinyon Stationary Pump conveying flue dust, direct connected to rotary compressor.

Fuller-Kinyon Stationary Pump in finish mill, direct connected to duplex rotary compressor.



Fuller-Kinyon control board in pack house.

STURTEVANT Air Separators at Work in the Modern Northampton Plant of Universal Atlas Cement Co.

The two Sturtevant Air Separators shown here, above the finish mills, are part of the equipment that helps make Universal's Northampton plant one of the most outstanding in the country.

Find out how *Sturtevant* gives (1) Range of fineness from 40 to 350 mesh. (2) Capacities of ¼ ton to 50 t.p.h., while increasing mill capacity as much as 300%. (3) Controlled specific surface area. (4) lowered mill and product temperatures.

The Northampton Plant, incorporating the most advanced practices of the cement industry, is another of the long list of modern cement plants using *Sturtevant Air Separators.*

All *Sturtevant Air Separators* have been installed "on approval" — none have been rejected. Proof enough that *Sturtevant* does a real job — *can do a real job for you. Write for latest bulletin and engineering information now!*

STURTEVANT MILL CO., Harrison Square, BOSTON 22, MASS.

STURTEVANT

AIR SEPARATORS • RING ROLL MILLS • JAW CRUSHERS
CRUSHING ROLLS • SWING SLEDGE MILLS • MOTO-VIBRO SCREENS
ROTARY FINE CRUSHERS

"Quarrying" High-Calcium Limestone

Flotation applied to Lehigh Valley cement rock

IT WAS EXPLAINED in the introductory article that the simplest way to look at the flotation plant at the Northampton plant of the Universal Atlas Cement Co. is to consider it a limestone quarry where various grades of limestone up to 87 percent $CaCO_3$ can be "mined" to make slurry, only the limestone is all ground and ready for use.

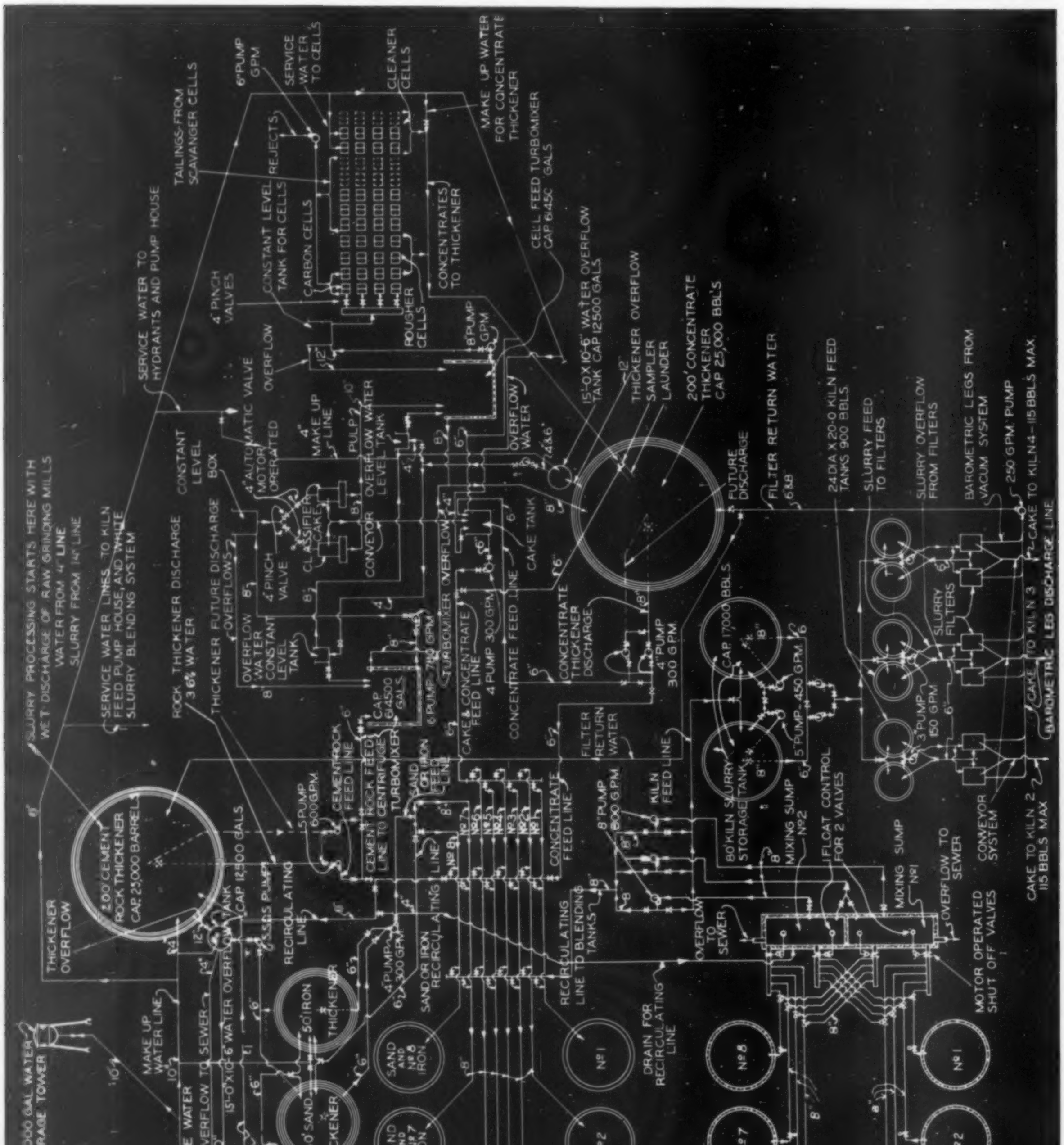
The finished product of the raw grinding plant goes first to a 200-ft. thickener as a thin slurry containing 85 to 87 percent water. This slurry enters at the edge of the thickener and flows through a launder, on a bridge, to the center. As the solids settle to the bottom, they are collected by the revolving rakes and are drawn from the bottom as a thickened slurry containing about 36 percent water. Two slurry pumps send this slurry either to blending tanks as a finished product for blending, or to a turbo-mixer alongside the flotation cell house. This slurry contains rock varying from 68 to 76 percent $CaCO_3$. The amount diverted to the turbo mixer for further processing depends fundamentally on the current analysis of the raw rock and on the kind of cement being manufactured.

The turbo-mixer has only one function and that is to mix water with the thickened slurry so that it will contain about 65 percent water. This is necessary to supply a suitably thin slurry for the centrifugal classifiers, or as they are usually called in the cement industry, centrifuges. This device was described in some detail in the September, 1943, issue of ROCK PRODUCTS. The cake from the centrifugal classifiers, that is, the coarser material, is about 75 percent $CaCO_3$ and contains only about 23 percent water. In other words the centrifuging raises the $CaCO_3$ content of the feed 2.8 to 3.5 percent. The reason the cake contains more $CaCO_3$ than the feed is because the coarser material (relatively) contains most of calcite-quartz material in the quarry rock.

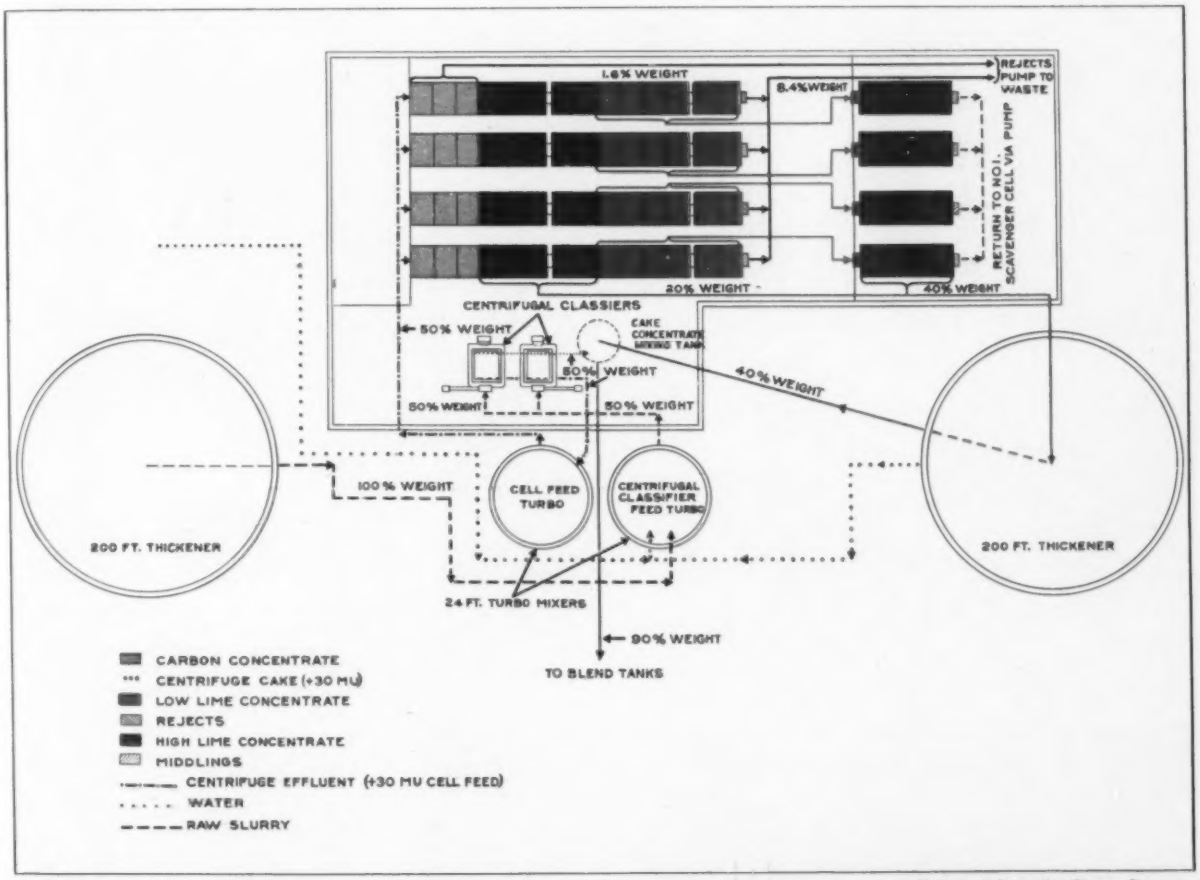
The effluent of the centrifugal classifiers, the fines, are the feed for the flotation cells. It runs about 71 percent $CaCO_3$. The centrifugal classifier normally operates so that the cake and effluent contain about equal amounts of solids, but by changing the speed of the centrifugal classifiers the ratio may be changed as, for example, 40:60 to 60:40. The effluent of the centrifugal classifiers does not contain enough water for the flotation cell operation, so the second turbo-mixer stirs it up with enough more water to bring the total up from 78 to 85 percent. This is the thin slurry fed to the standard type froth flotation cells.

The flotation cells are arranged in batteries as shown on the flowsheet accompanying this article. They may be operated in various combinations. At present, the first three cells across the four parallel rows are floating off the graphitic carbon and some of the combined silica and alumina. The carbon in itself is not

Fig. 19: Starting point in the processing of the raw mill product: the 200-ft. reinforced-concrete, cement-rock slurry thickener, which receives the overflow of the bowl classifiers in the raw mill building. The thickened slurry from the bottom goes either to blending tanks or to the turbo-mixer, to make centrifugal classifier feed



Piping chart for the entire slurry processing system

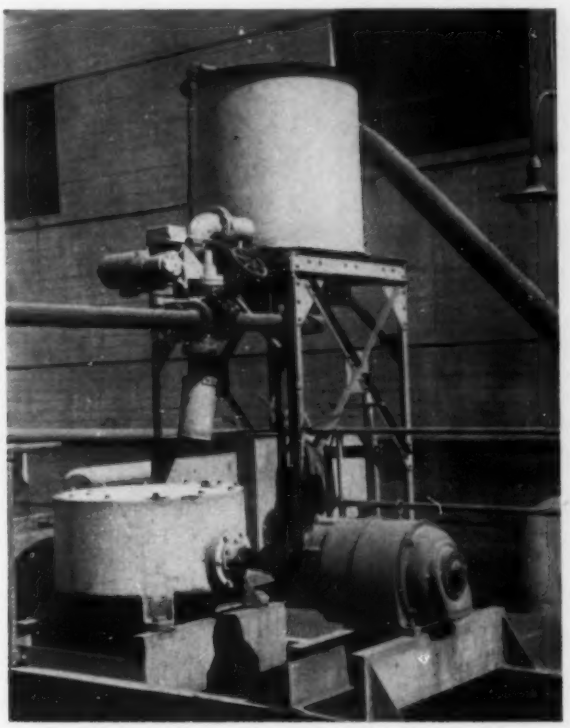


Courtesy of Separation Process Co.

Above: Flow sheet of the flotation processing as designed. As operated at present, beyond the first cross tier of three cells (grey) all the cells would be shown in blue, as they are operated in series in each row as a single cell, froth floating calcium carbonate. The percentage weight figures shown refer to the percentage by weight of solids in the original slurry from the first thickener

Fig. 20, to the right: The turbo-mixer mechanism, fed from a constant head tank with thickener slurry and water. All the turbo-mixer does is mix the slurry thoroughly with enough water for the feed to the centrifugal classifiers

Fig. 21, below: Turbo-mixer—the mixing is done by six broad blades on the bottom revolving at 84 r.p.m. The tank is 24-ft. diameter and 20-ft. high



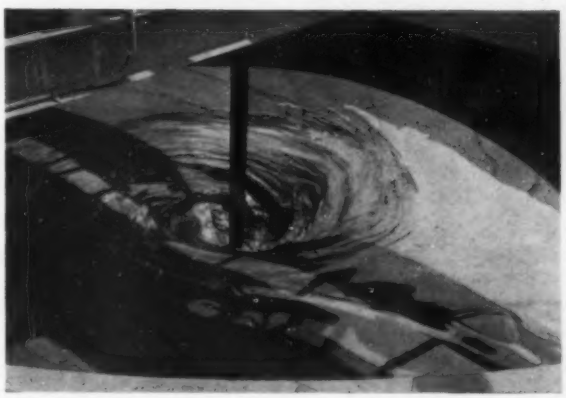


Fig. 22: Centrifugal classifiers on the same floor of the cell house as the flotation cells. The effluent is the feed for the flotation cells, first going to a second turbo-mixer to be diluted with more water. These centrifugal classifiers are 54 x 70-in., driven by 125-h.p. 440-v. a.c. motors through V-belts and magnetic clutches which permit speed variation of the classifier from 350 to 600 r.p.m.

Fig. 24: Some of the manually controlled valves in valve house adjoining cell house

Fig. 25: Graphitic carbon being floated from the first battery of cells

Fig. 23: Flotation reagent feeders supplied from a constant level tank at the upper end of the building and the supply to each feeder is regulated by a float valve. Control switchboard in the background

(Continued from page 61)

objectable because it would burn out in the kilns, but it is a strong reagent and would interfere with the succeeding processing.

Froth Float Limestone Concentrate

All the rest of the cells, in each row, are now being operated in series as a single cell, froth floating a limestone concentrate. The cells are so built that each battery is 6 in. below the preceding one and the feed flows through them continuously by gravity. There are 72 cells, each 66 in. in length, in four parallel rows of 18 cells each. The final product of flotation as now operated is an 86 percent $CaCO_3$ concentrate with 87 percent water, which goes to a second 200-ft. thickener.

The cell tank construction is such that concentrates may be taken off in two stages and the flotation process reversed; that is the aluminum and other silicates floated and the limestone concentrate depressed. At present the silicates constitute the depressed rejects, containing about 20 percent $CaCO_3$.

The thickened slurry from the 200-ft. concentrate thickener (about 86 percent $CaCO_3$) is pumped to the "clay" or cake mill, on the first floor of the cell house. Here it is mixed with the cake from the centrifugal

(Continued on page 66)

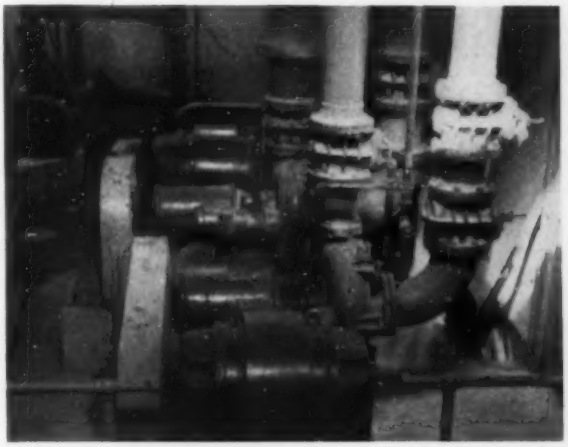


Fig. 26, above: Typical slurry pumps in basement below cell house

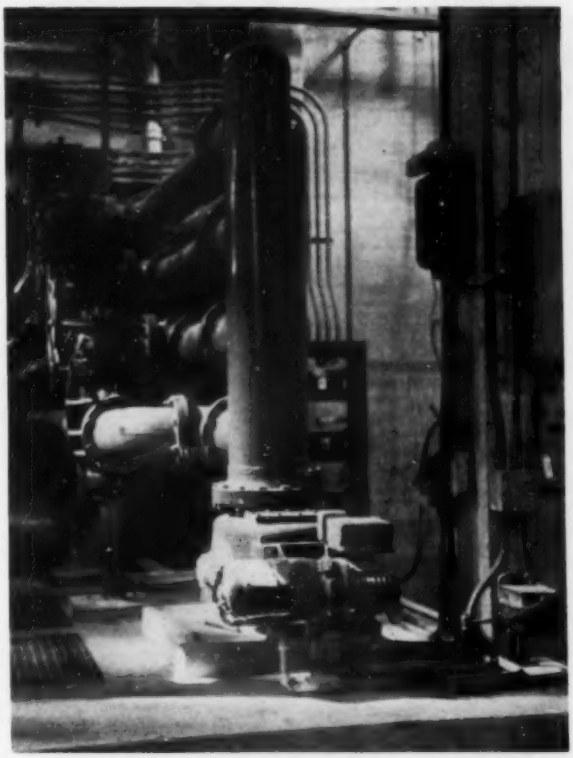


Fig. 27, to the right: Riser with motor-operated valve on slurry lines into tunnel under the blending tanks

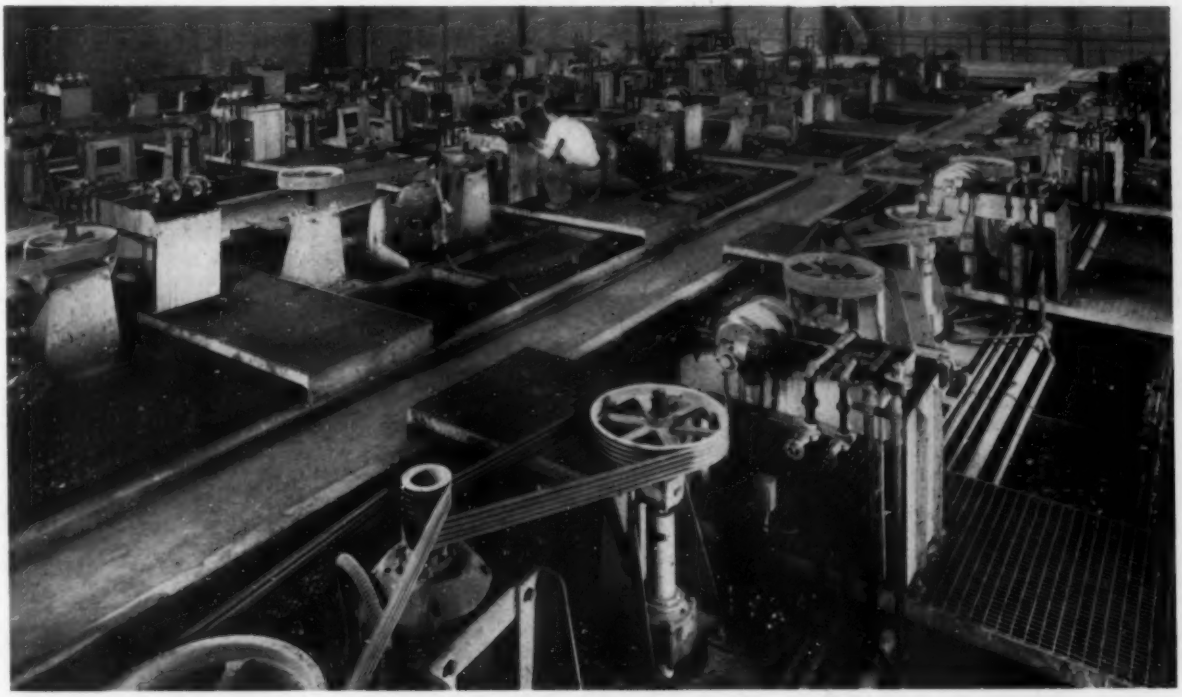


Fig. 24: The cell house containing 72 cells. The near cells are floating graphitic carbon. Note the lighter color of the froth in the cells beyond. The cell rotors are driven by V-belts from 15-h.p. motors placed between each two cells (315 to 490 r.p.m.)

Fig. 31: A construction view of the eight blending tanks. Mill building and raw material storage building below

(Continued from page 64)

classifiers (about 75 percent $CaCO_3$) and with enough water to bring the total to about 36 percent. The resulting blend is about an 80 percent $CaCO_3$ slurry, which goes to the high lime blending tanks. The high lime blending tanks are drawn upon to "sweeten" the natural rock slurry containing an average of 73 percent $CaCO_3$. The water overflow from the concentrate thickener is used in the turbo-mixers or the centrifuged cake and concentrate ("clay" mill) mixer, or it can go back into the mill circuit. The silica lost in the rejects is replaced by ground sand slurry, which is available for blending with any limestone slurry in any amount.

A piping chart is shown on page 62 as it conveys a better idea than any words could of the processing involved. There are many pumps and valves, and water is taken out of the slurry, and put back several times, but it must be remembered that only a part of the slurry is processed. Except for special cements a considerable part of it is finished when it is removed from the first thickener.

The cell house contains an office and field laboratory for controlling the flotation processing, and in a gallery adjoining the cell house are the valves for directing the disposition of the slurries.

The cell house is provided with a modern steam heating system from a stoker-fired boiler.

Fig. 29: Typical slurry blending tank. Eight tanks in all, 30-ft. diameter, 22-ft. deep

Fig. 30: Agitating mechanism of the slurry blending tanks. Compressed air passing down the center shaft is liberated at 10 different points on the revolving arms

PROCESSING CONTROL

Northampton, Penn., plant, Universal Atlas Cement Co., has the latest in laboratory equipment

THE MODERN PROCESSES used at the new Northampton plant of the Universal Atlas Cement Co. simplify the production control methods employed in the plant laboratory.

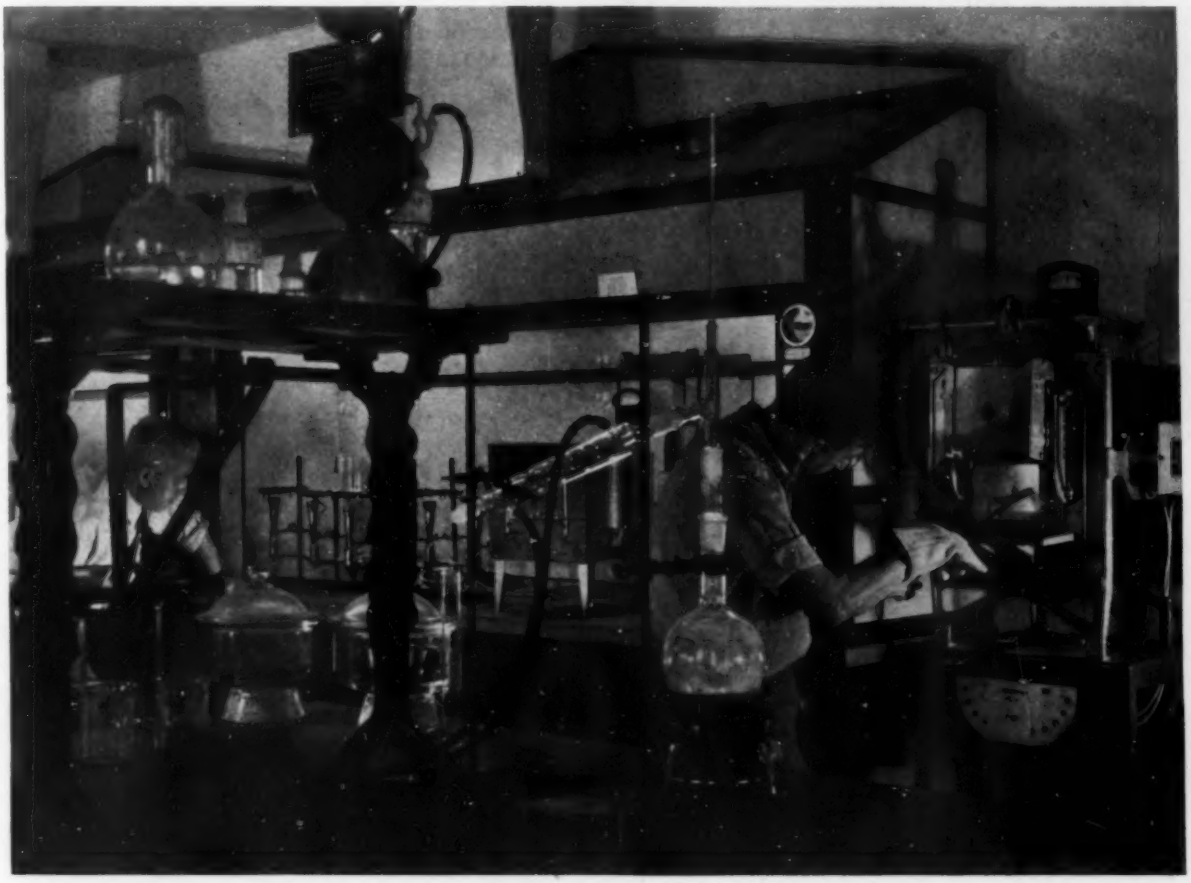
The first sampling is done on the feed to the first 200-ft. thickener (or the feeds to the smaller thickeners used for sand, iron ore and white cement slurries). An automatic sampler here is provided for fineness control only.

The contents of each of the eight blending tanks are analyzed for chemical control by "thief" samplers. As explained in the article elsewhere on slurry processing, some of the blending tanks are filled direct with the quarry rock slurry from the ground material removed from the thickener. The other tanks are filled with high lime slurry from the processing plant. These two slurries are blended with some sand and/or iron ore slurry in one of the eight blending tanks set apart for this use. The correctly blended slurry is then pumped to the two large slurry storage tanks, from which the kiln feed tanks under the kilns obtain their feed for the slurry filters.

The other control is in the cell house where the thin slurries for the centrifugal classifiers and the flotation cells are carefully and constantly analyzed for the percentage of solids. It is important to processing that this percentage be kept constant.

Of course, the cement is analyzed and tested in the customary manner. The cement samples are taken at hourly intervals from the hopper over the cement pump to the silos. Care is taken to get a representative sample.

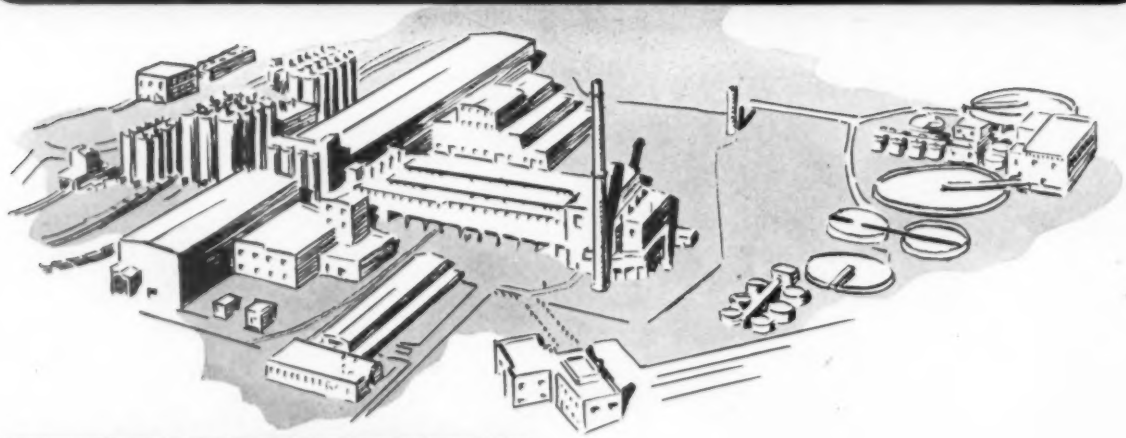
Specific surface determinations for production control are made by an air permeability device developed by the Universal Atlas Cement Co., since it is more rapid than the Wagner turbidimeter. The turbidimeter is of course used under the standard test requirements, and results correlated with the air permeability method.

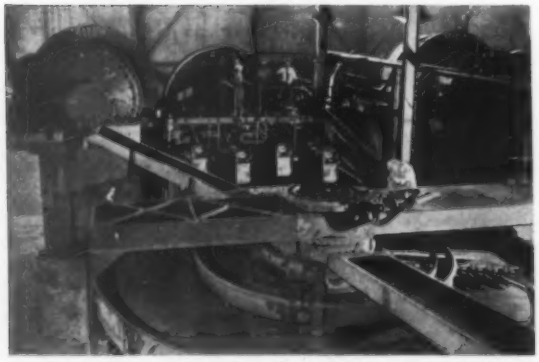


Laboratory view, Northampton, Penn., plant of the Universal Atlas Cement Co. The interested reader will see some innovations in laboratory furniture, such as the gas burners made into a single unit with crucible or flask-holding bracket. In the center background is evaporating cabinet, completely housed, with exhaust fan for vapors and heat. High temperature electric muffle furnace at the right

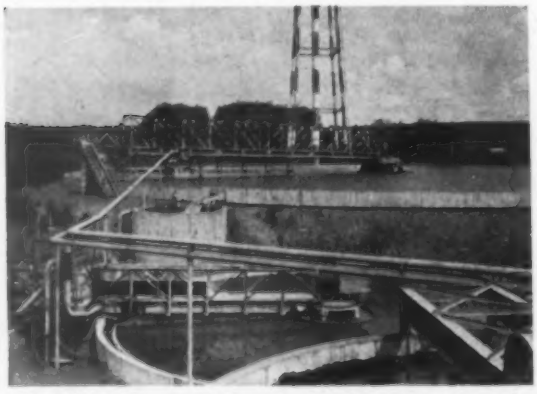
UNIVERSAL ATLAS' NEW NORTHAMPTON PLANT

DORR EQUIPPED FOR MODERN CEMENT PRODUCTION





Close up of Dorr Bowl Classifier in closed circuit with ball mill.



Dorr Slurry Mixers with Dorr Torq Thickener in background.

UNIVERSAL ATLAS' new plant at Northampton, Pa., employs the very latest developments known to the cement industry. Result—production of cements of different chemical composition from a single source of crude limestone readily available at the property through the use of the Breerwood Process.

Dorr Classifiers are employed for primary and secondary grinding—Dorr Thickeners for slurry and concentrates thickening—Turbo Mixers for slurry conditioning and a battery of Dorr Slurry Mixers for blending and storage. Dorr Classifiers and Thickeners are also used for the separate sand-iron circuit—an innovation used for the first time at Northampton.

This flexible plant—capable of delivering a diversity of products from a uniform raw material—is a good example of how the cement industry is meeting the challenge of today's intricate construction requirements. It is a good example, too, of the important role Dorr equipment is playing in these advanced methods.

If you are planning a new plant or would like to convert to more modern methods, we will be glad to help you with our experience.

DORRCO

THE DORR COMPANY, ENGINEERS

NEW YORK, N. Y. . . . 570 LEXINGTON AVE.
ATLANTA, GA. . . . WILLIAM-OLIVER B:DG.
TORONTO ONT. . . . 80 RICHMOND ST. W.
CHICAGO, ILL. . . . . 221 NO. LA SALLE ST.
DENVER, COLO. . . . . COOPER BUILDING
LOS ANGELES, CAL. . . . . 811 WEST 7TH ST.

RESEARCH AND TESTING LABORATORIES
WESTPORT, CONN.

SUGAR PROCESSING
PETREE & DORR ENGINEERS, INC.
570 LEXINGTON AVE., NEW YORK

RESEARCH ENGINEERING **DORR** EQUIPMENT

ADDRESS ALL INQUIRIES TO OUR NEAREST OFFICE

Instrumental Control of Kilns

Northampton plant of Universal Atlas Cement Co. solves problems of care and maintenance of instruments

FINISHED SLURRY is pumped to two 80-ft. concrete storage tanks for kiln feed. Exceptional measures are taken to keep this slurry well mixed. From a center shaft a frame carrying mixing blades is rotated. The frame also has compressed-air outlets, and in addition, 5-in. slurry pumps take slurry from the bottoms and return it to the tops of the tanks, thus keeping it in continuous circulation.

Slurry from the kiln storage tanks is pumped to the kiln feed tanks under the kilns. There are two of these concrete tanks under the feed end of each kiln. Slurry from these is pumped to the constant level basin which feeds the disk filters in a building beyond the kiln backhousings. The overflow of the constant level basin returns by gravity to the kiln feed tanks.

Two filters are provided for each kiln. The filters are the rotating-disk type vacuum filters. These have two variable vacuums, each with an indicator. One vacuum is designed to control the depth of the cake and the other the dryness or amount of dewatering of the cake previously picked up. Thus either the amount of water or the amount of cake can be controlled within limits. The actual control of the amount of the feed to the kiln is through speed control of the feed pump, as described later. This is tied in with speed of the kiln and other variables, and is controlled by the kiln burner on the kiln control board, to be described.

Each filter unit consists of nine disks 8-ft. 10-in. in diameter, with a total filtering area of 936 sq. ft. The filters are designed to reduce the moisture content of the slurry from 36 to about 23 percent water. Vacuum for the filters is supplied by a battery

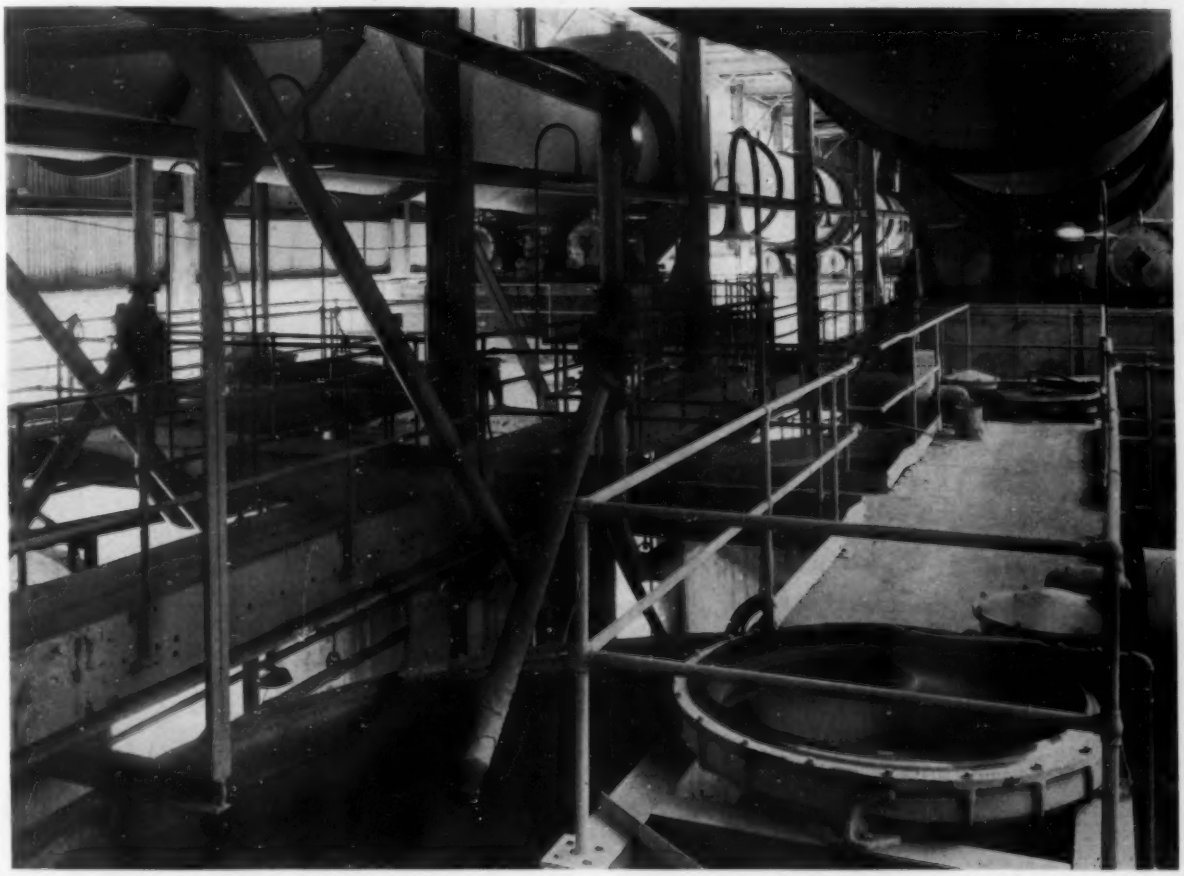


Fig. 32: Kiln feed tanks. Slurry is pumped from these to constant-head tank feeding filters

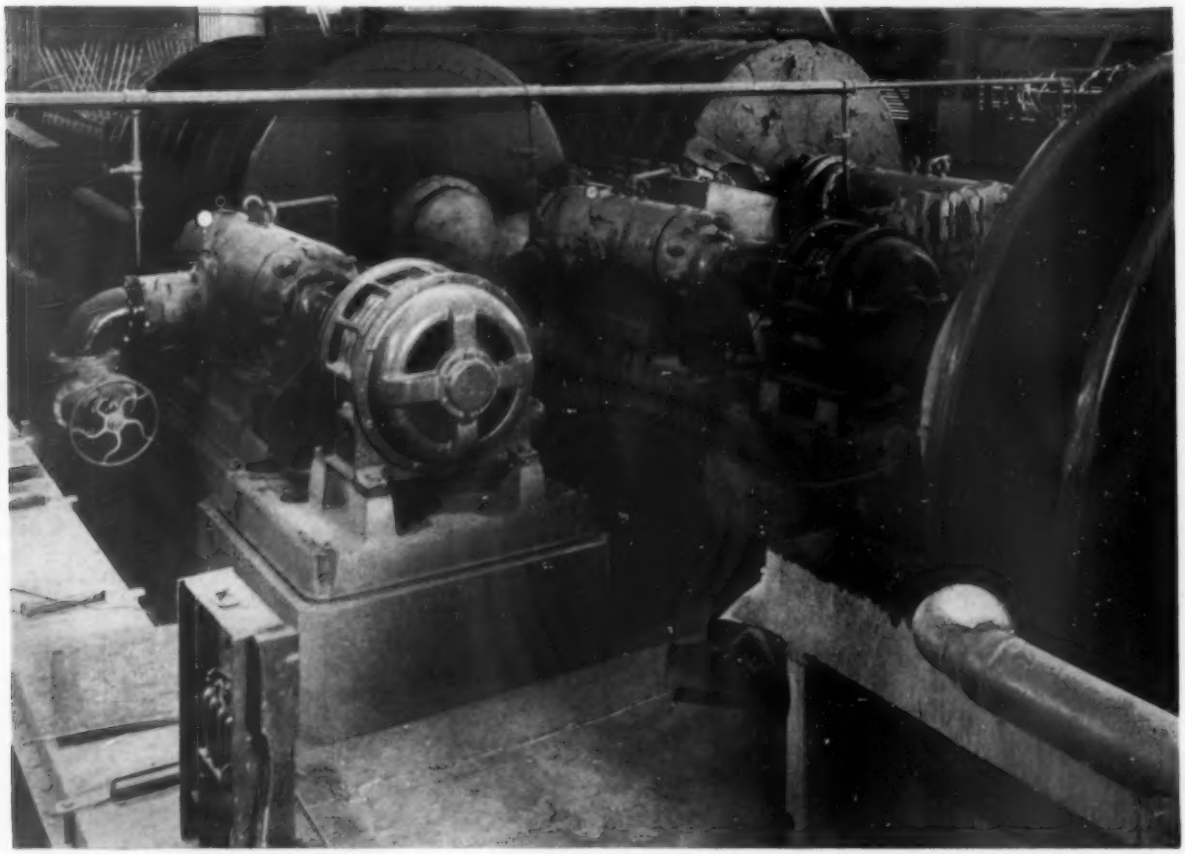


Fig. 33: Slurry filters and vacuum pumps. Four additional filters being installed behind these

Fig. 35: M-G speed controllers for filter operation

Fig. 34-A: Example of rubbery character of filter cake discharged

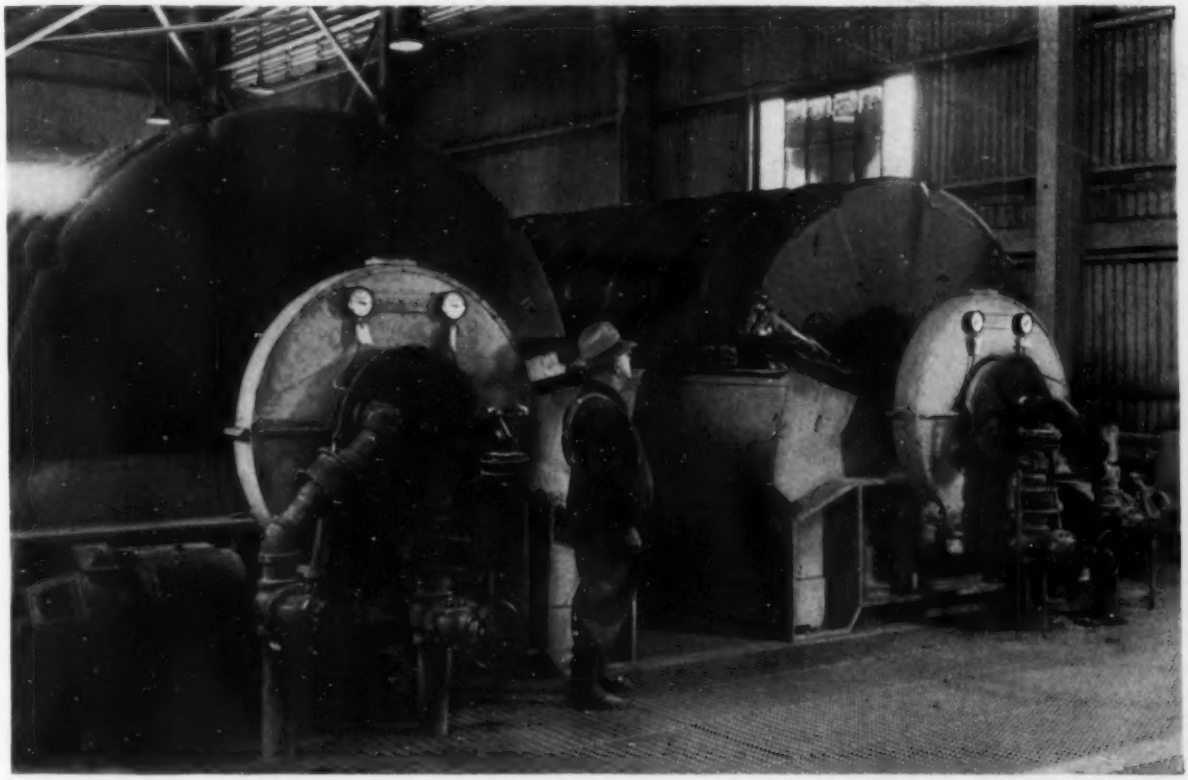


Fig. 34: Filters from the control ends. Vacuum gauges show vacuum on cake pick-up, and on cake during dehydration or drying. Compressed air loosens cake and rakes scrape it off. This picture was taken while experiments were being made to determine the most satisfactory condition of the cake for the pump feed

of rotary pumps, which are really air compressors in reverse. The filters are also provided with variable speed control through small M-G sets alongside, which provides another method of controlling the amount of feed.

The filter cake drops into hoppers feeding pug-mill type conveyors, which push it into the feed hoppers over a standard type of concrete pump. These pumps have long been used for placing concrete on difficult construction jobs, like tunnel lining, but this is the first use of them for feeding filter cake to kilns. There are still problems to be worked out, for the flowability of the slurry cake is not identical with that of concrete. The feed pipe extends through the kiln backhousing and two or three feet into the kiln. It is water-jacketed.

This method of feeding slurry cake to the kiln has the advantage that the feed pipe packed around with fire clay gives an air-tight connection with the kiln, and the construction and operation of the pump is such that no gases from the kiln can escape through it. With waste-heat boilers on 250-ft. kilns it is obvious that air-tight backhousing on the kilns is quite important.

Provision has been made to feed the dust collected under the economizers and waste-heat boilers to the pug mill mixers ahead of the filter-cake pumps. This is accomplished by a system of screw conveyors and elevator to a screw conveyor above the floor of the filter room, which distributes the dust to the pug mill mixers in any amount desired.

The plant has four kilns. One is 9-ft. diameter and 248-ft. long, the other three are 10-ft. 6-in. diameter and 250-ft. long. These kilns have

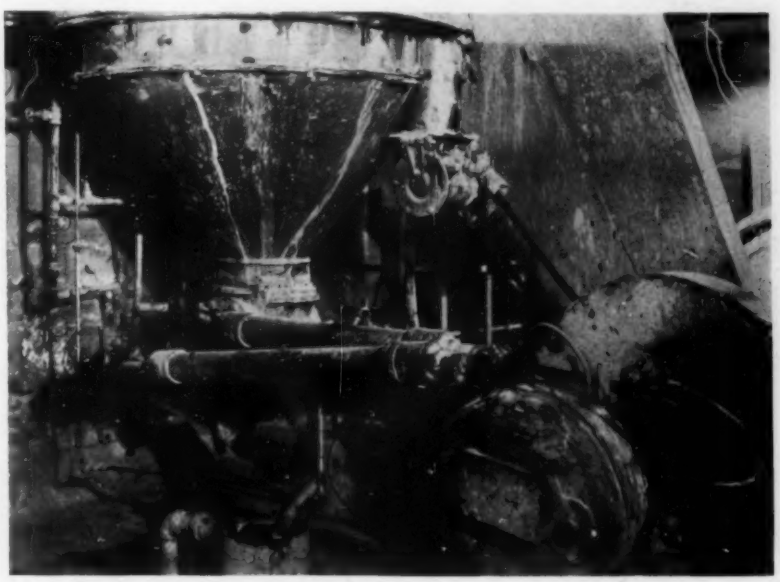


Fig. 36: Concrete type pump for pushing slurry into kiln

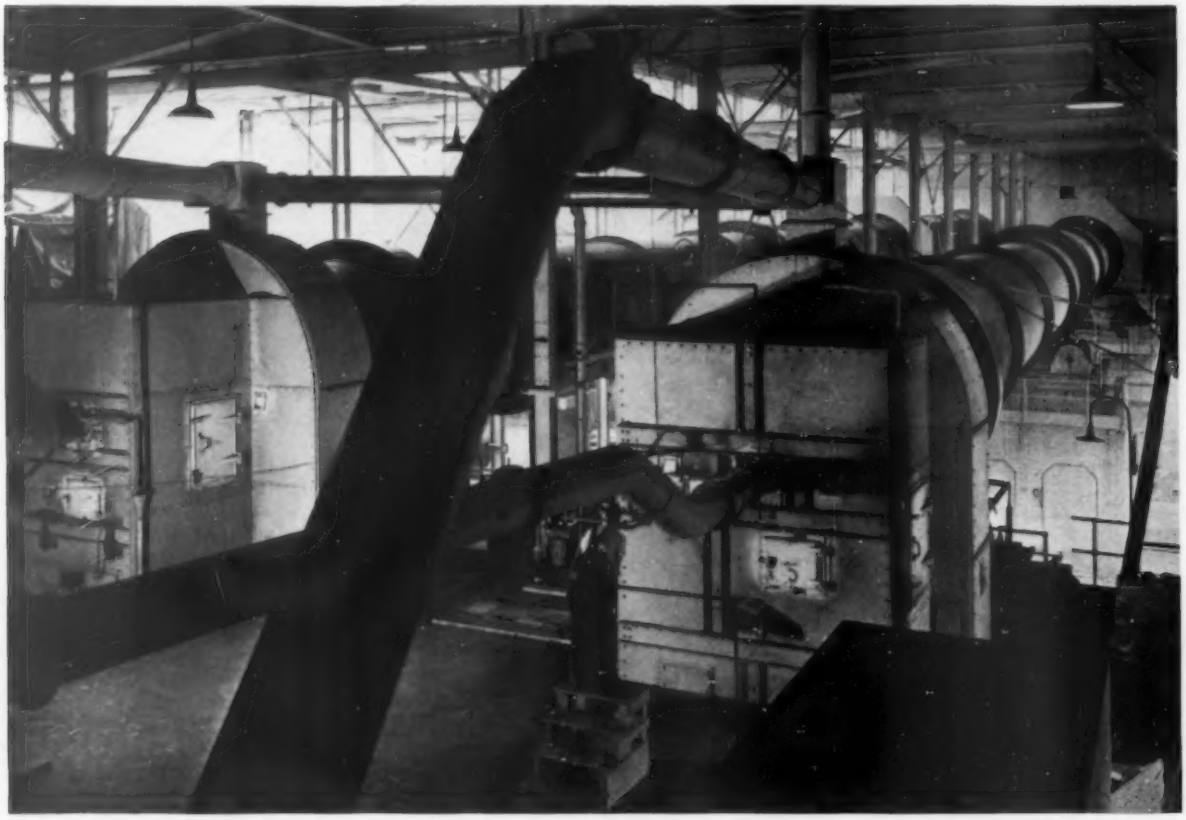


Fig. 37: No. 1 and No. 2 kilns, showing hot air intakes for coal dryer-pulverizers

all-welded shells with stiffening rings every 20 ft., and each is carried on four box-type rings riding on solid forged rolls, which have water-cooled bronze bearings and flood oil lubrication. The kiln drives are 125-hp. adjustable speed d-c. motors using current from the motor-generator sets in the main electrical control room or substation.

The kiln shells have shims or wedges inside the riding rings to facilitate alignment. These are shown in one of the views. The kilns also have manholes about 75-ft. from the discharge end to facilitate handling the lining brick—a new feature.

The kiln firing equipment does not vary from standard practice using unit coal pulverizers which take hot

(Continued on page 76)

Fig. 38: Firing end of kiln showing electronic type pyrometer at the left

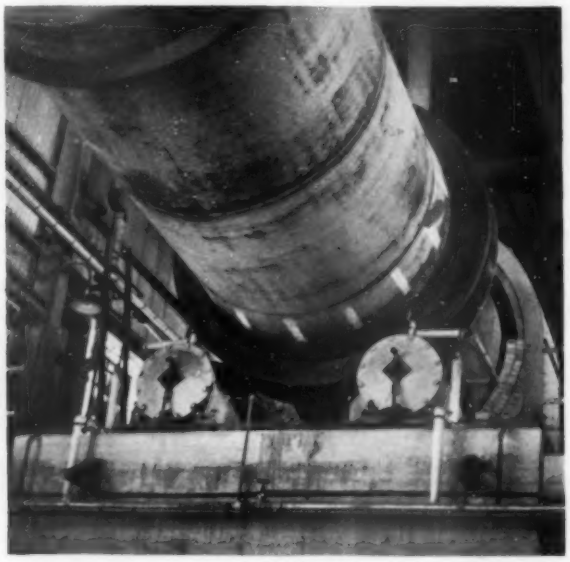
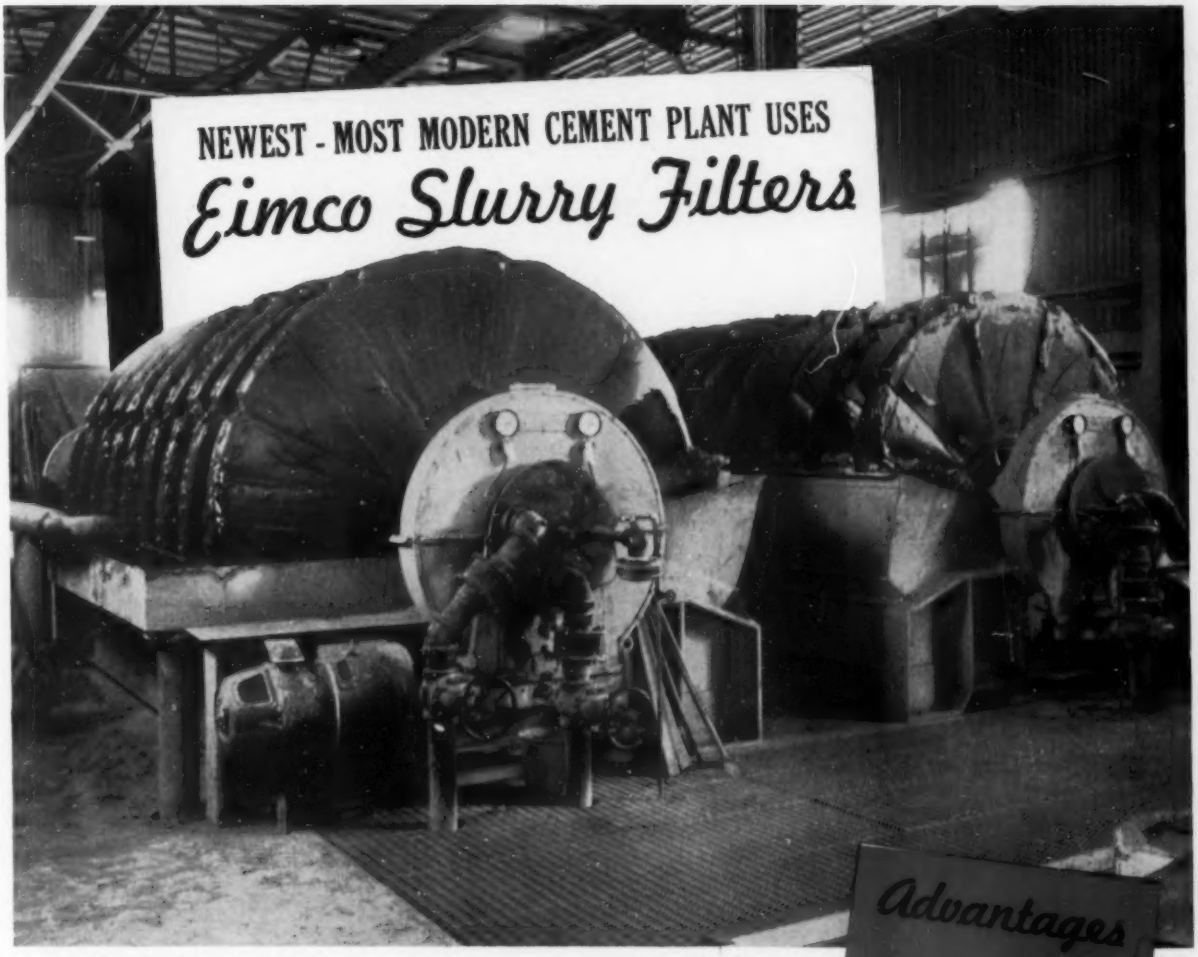


Fig. 39: Kiln riding ring and rollers, showing shims or wedges for aligning kiln



Eight Disc-type Eimco Vacuum Filters with a total filter area of approximately 7000 square feet were installed in one of the newest and most modern cement plants recently built and put into operation. Through its engineers and the cumulative experience of years of cement plant operation, the management was in position to design and build most efficiently; the selection of Eimco Filters for dewatering slurry was a compliment to Eimco.

Eimco Filtration engineers will service this installation and cooperate with plant management to the end that this newest, most modern addition to the cement industry shall fulfill all expectations.

Advantages

★

1. Reduced fuel consumption.
2. Increased kiln capacity.
3. Improved control of raw material uniformity.
4. High waste heat boiler efficiency.
5. Increased grindability.

EIMCO

THE EIMCO CORPORATION, SALT LAKE CITY 8, UTAH
NEW YORK, 120 BROADWAY — SACRAMENTO, 1217 7TH ST
CHICAGO, 111 W. WASHINGTON ST. — EL PASO, MILLS BUILDING

Fig. 40: Kiln control, coal mill control panel. The instruments that appear to be framed are in a dust-tight room behind the panel and are seen through plate-glass windows

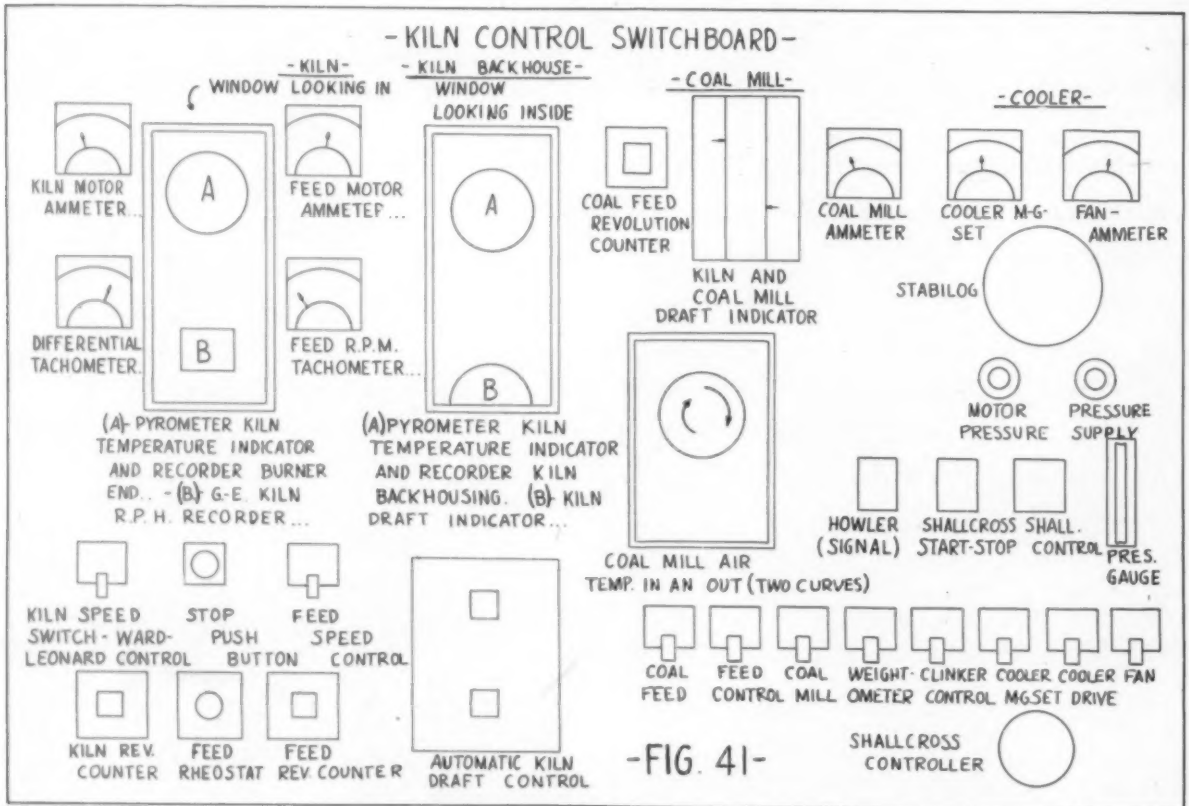
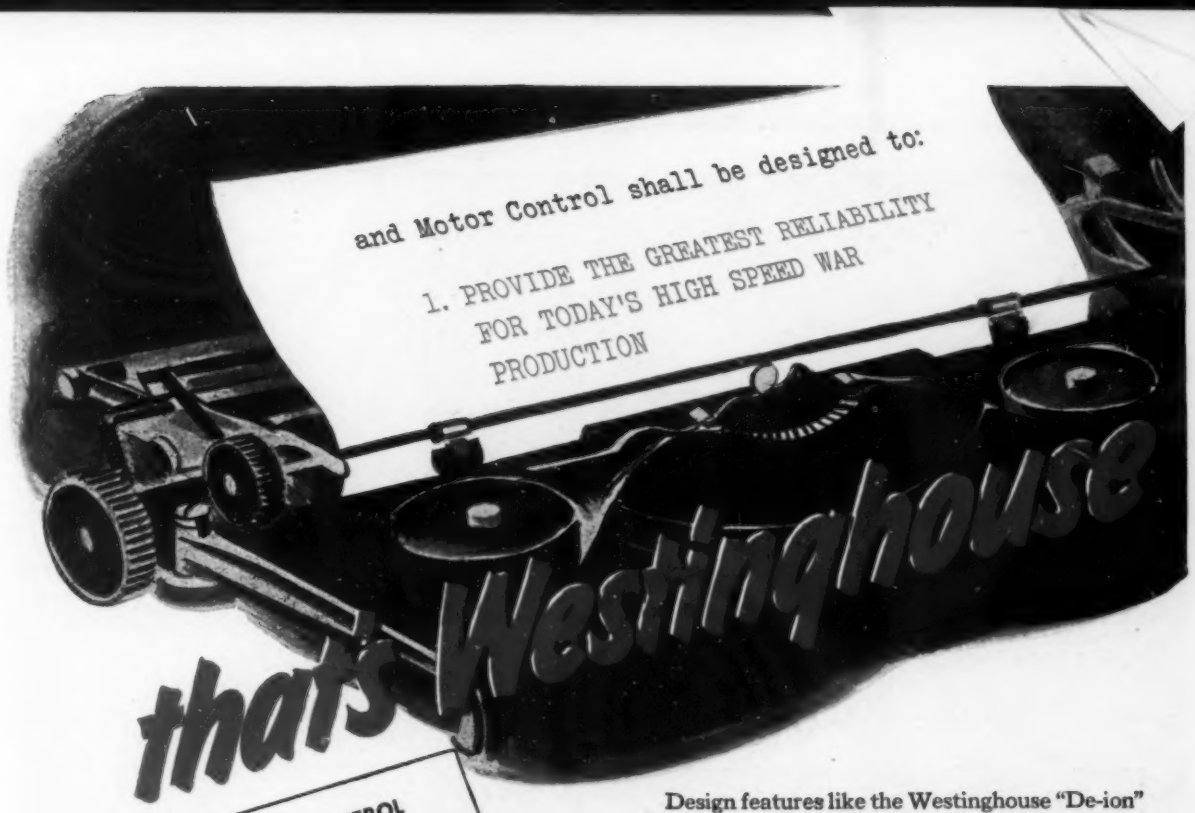
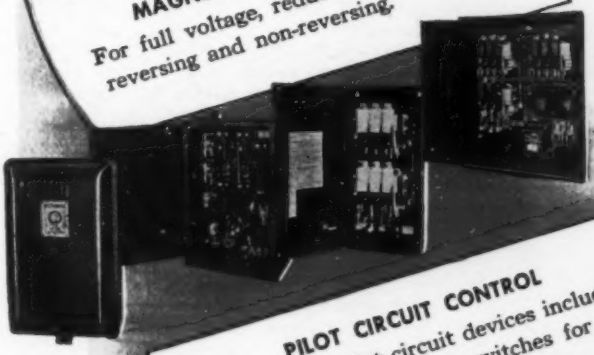


Fig. 41: Diagram of instruments and controls on the kiln panel. The control panel for each kiln is adjacent to that kiln, and is separate from other kiln control panels

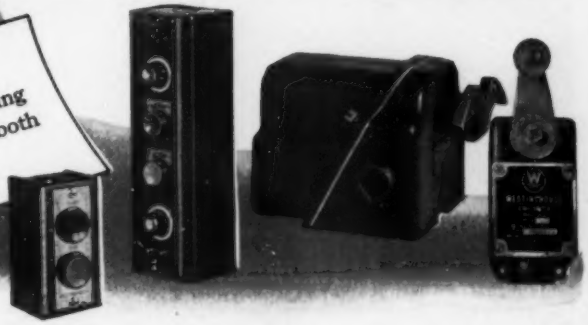


MANUAL MOTOR CONTROL
For full voltage, reduced voltage, or step starting, speed regulating, reversing and non-reversing.

MAGNETIC MOTOR STARTERS
For full voltage, reduced voltage, step, reversing and non-reversing.



PILOT CIRCUIT CONTROL
All types of Pilot circuit devices including push buttons and limit switches for both standard and heavy-duty service.



Design features like the Westinghouse "De-ion" principle of arc extinction are certainly a common-sense "must". And today's production goals need the kind of protection that the Bi-metal overload relay can give. The Westinghouse line of a-c and d-c motor controls is complete for motor types that meet requirements of a wide variety of applications.

So when you need motor controls—write "Westinghouse" in the specifications. Then get your Westinghouse representative on the phone. He'll help you all the way from application to installation. Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., Dept. 7-N.

J-21270

Westinghouse

PLANTS IN 25 CITIES... OFFICES EVERYWHERE

MOTORS AND CONTROLS

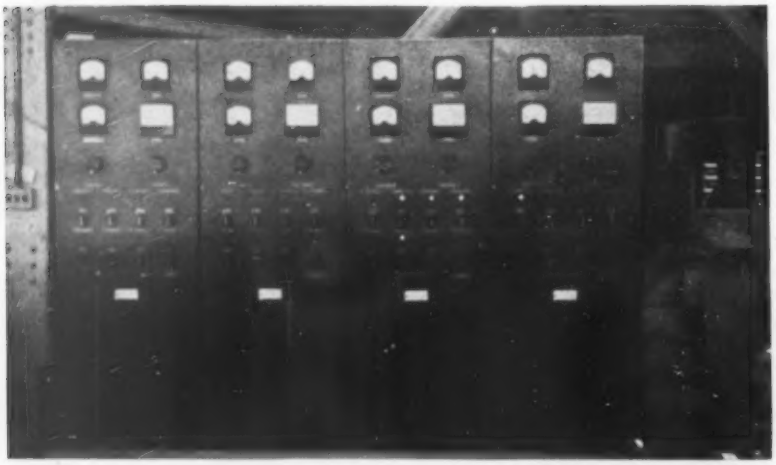


Fig. 43: Filter control panels—one panel for each filter. Fig. 42, to the right, filter control panel details

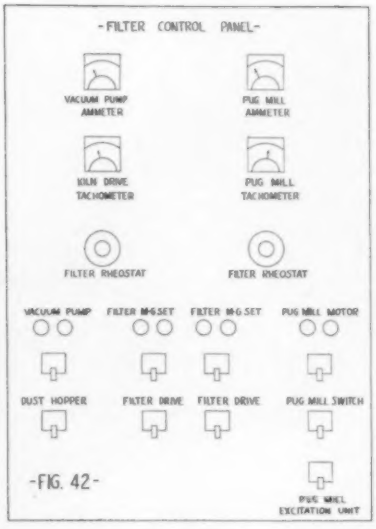


Fig. 42: Filter control panel details, below

Fig. 44: Battery of coal pulverizers and dryers. These are at ground floor level, as are also the clinker coolers, the ends of which may be seen at the right

(Continued from page 72)

air from the tops of the kiln hoods for drying the coal and primary combustion air and air from the hottest part of the clinker cooler for secondary air. This is similar to the Leeds, Ala., plant installation, described in ROCK PRODUCTS, April, 1939, although a different type of coal pulverizer-dryer is used.

The clinker coolers are of the enclosed box conveyor type, one using a reciprocating grate mechanism and three shaker grate mechanisms. They are standard equipment and require no special description. Elevators take the clinker and discharge it over the wall of the stone and clinker storage building (624-ft. long and 100-ft. wide) into chutes which discharge about 30 ft. inside, where a bridge crane and clamshell bucket place it in appropriate compartments, and subsequently feed the clinker-mill hoppers.

It is well to remind the reader of the strategic position this storage building occupies in the scheme of things. The mill building and the discharge end of the kiln building both abut upon one side of the storage building which greatly facilitates the material handling problems.

Kiln Controls

It is the kiln control board in the kiln building which will attract the experienced visitor, because here at least the attempt has been made to answer all the problems of clinker burning. This board is shown in one of the views and the sketch accompanying is a diagram of the instruments and switches on it.

We have often heard complaints

(Continued on page 84)

St. Regis VALVE PACK SYSTEMS... *Available*

TO SAVE TIME — MANPOWER — MONEY

1 **SAVE TIME.** Preweighing and forcing cement at high speed through the valve opening, the St. Regis Packer under average operating conditions packs from 8 to 24 (94 lb.) Multiwall Bags per minute . . . saves from 30% to 50% in actual manhours.

2 **SAVE MANPOWER.** *Only one* operator is required on the St. Regis Packer even when it has 2 or 4 filling tubes. Since all lifting of bags is eliminated, the machine can be successfully operated by a woman where the manpower shortage is acute.

3 **SAVE MONEY.** Installed and operated at minimum expense and eliminating the need for any closing equipment, the St. Regis Valve Bag Packer assures lasting conomy.

4 The number of these machines available for immediate installation is limited. If interested please advise our nearest office.

MULTIPLY PROTECTION • MULTIPLY SALEABILITY

ST. REGIS PAPER COMPANY

TAGGART CORPORATION • THE VALVE BAG COMPANY

NEW YORK: 230 Park Avenue

CHICAGO: 230 No. Michigan Avenue

IN CANADA

BATES VALVE BAG CO., LTD.
Montreal, Quebec
Vancouver, B. C.

Baltimore, Md. Birmingham, Ala. Dallas, Tex. Denver, Colo.
Los Angeles, Calif. New Orleans, La. Seattle, Wash.
Franklin, Va. Nazareth, Pa. San Francisco, Calif. Toledo, Ohio

PACKING

Latest in Cement Packing Houses

THE PACK HOUSES of the new Northampton plant of the Universal Atlas Cement Co. are chiefly interesting because of their design and the completeness of their equipment. There are, as has been stated in the introductory article, two separate and distinct pack houses, connected by a wide gallery on the floor over the packing machines, which serves as a storeroom for bags.

In the main pack house (for ordinary portland cements) is a master switchboard which shows all the cement pump lines and where the cement is flowing at the moment, including the white cement. This switch and control board, illustrated herewith, is in front of the pack house office, which is a glass enclosure, facing the switchboard. Lights on the board show the pump lines and silos in use, and the packing machines and silos to which the cement is going.

Unique design and complete dust collection are features

The cement storage is in two groups of 15 reinforced-concrete cylindrical bins in three rows with eight interstice bins—30 silos in all, with a storage capacity of over 450,000 bbl. Dividing the two 15-silo groups is the packing plant with four of the most modern type of dustless bag packers. Two packers discharge to cars or loading tracks at the right and two to cars on tracks at the left. Each 4-valve packing machine is automatic weighing and requires placing the valve-bag on the intake. Each packing machine is connected with a separate dust collector on a floor overhead, and the dust spilled is drawn up through the interior of the machine by a strong current of air to the dust collector. Vibrating screens protect the packing machine feed from any lumps or foreign matter.

The bag conveyors from the packing machine to the car door are of woven wire mesh belts with dust collector intakes below them.

The packing machine hopper bins are fed by movable cement pumps which travel in galleries under the rows of bins, with the air compressors in rows under the pack house at right angles to the pump galleries. This is now standard practice but the arrangement here is neat, and the cleanliness remarkable. Dust collector intakes in the basement take care of dust prevention here. The valves on the pump lines are all motor-operated from the switchboard already referred to.

The packing plant for white ce-

(Continued on page 80)

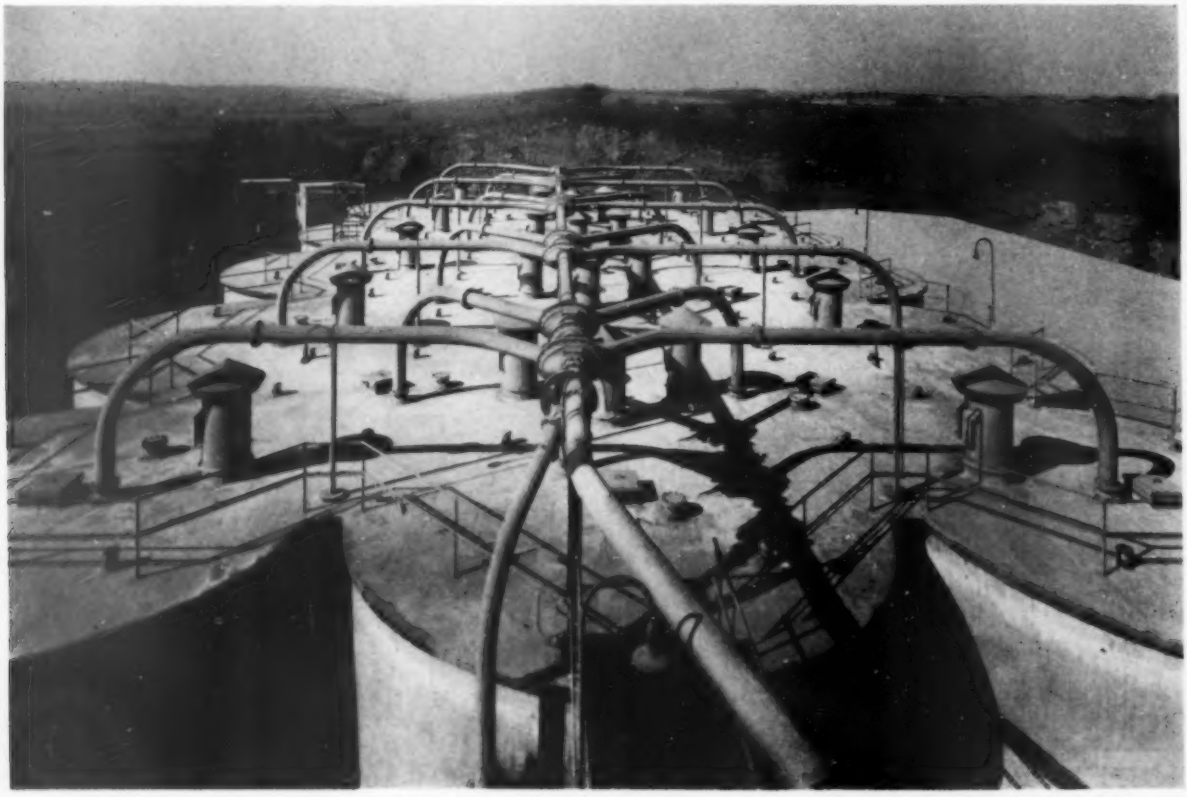


Fig. 45: Tops of one set of 15 silos looking toward the quarry. The primary and secondary crushing plants can be seen a little to the left in the distance

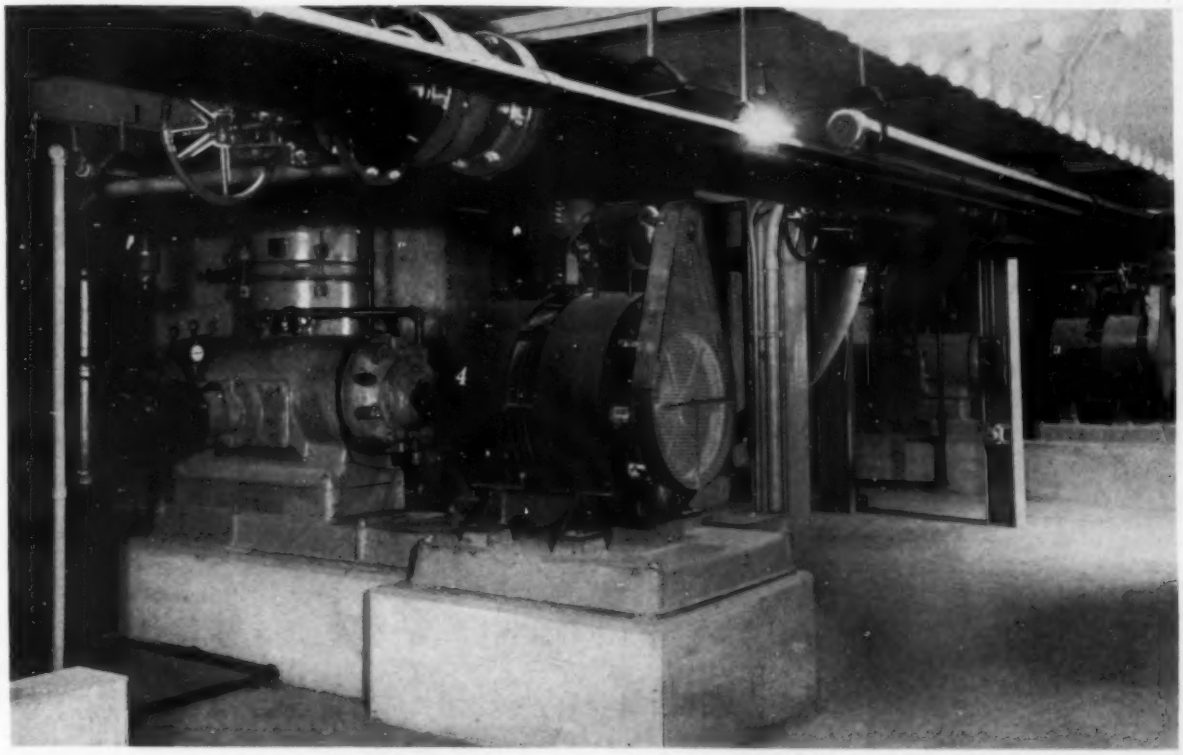


Fig. 47: Air compressors below the packing machine floor, on the same level as the tunnels under the silos (four in all, in gray cement pack house)

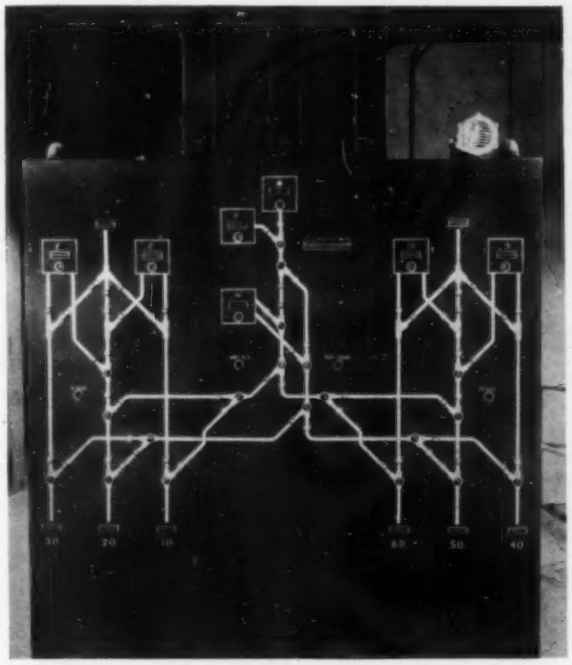


Fig. 46: Switch and control board for cement pumps, pump lines and motor-operated valves. This faces the glass-enclosed pack house office

Fig. 48: One of the galleries under the silos with movable cement pump in the distance

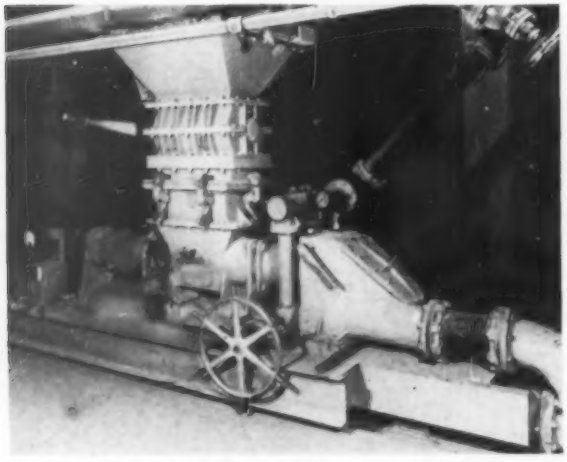


Fig. 49: One of the movable pumps which removes cement from the silos for loading out

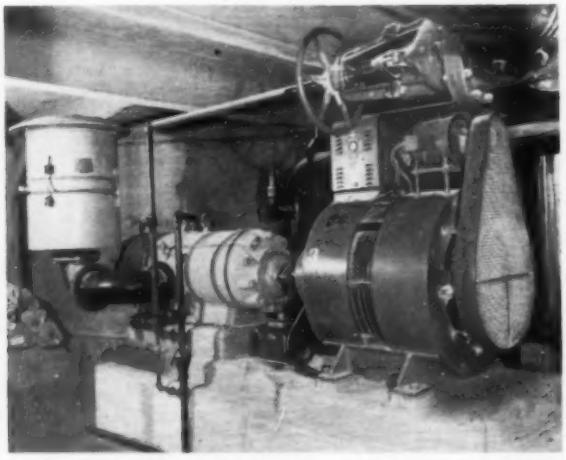


Fig. 50: Close-up of one of the compressors serving the cement pumps

(Continued from page 78)

ment is separated from the other packing plant by two railway tracks, but the overhead gallery is continuous through both pack houses. This pack house is equipped with the same kind of packing units, vibrating screens and dust collector units as the gray cement pack house. Packed white cement is loaded in cars on one side of the building. There are also two barrel packing machines which are equipped with separate dust collector units. These have open intakes in the shipping room near the packers.

Bulk cement may be loaded direct from any of the rows of outside silos with spouts from the bins, the flow of cement being facilitated by compressed air piped in near the spout intakes. In addition, a separate weigh house is provided where cars to be

(Continued on page 82)

Fig. 51: Enclosed vibrating screen connected to dust collector on floor overhead. One of these is ahead of each bag machine

Fig. 52: A dust collector is connected to each packing machine

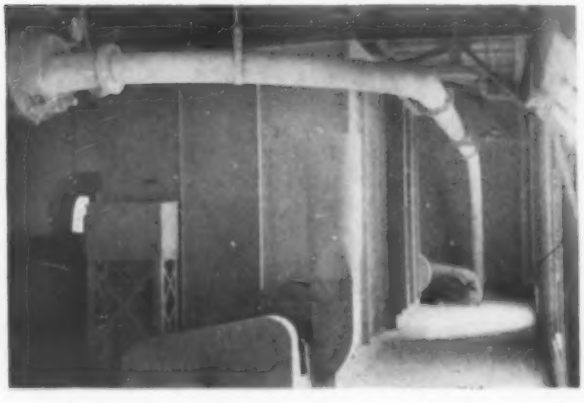


Fig. 53: Another view of a dust collector in the packing house

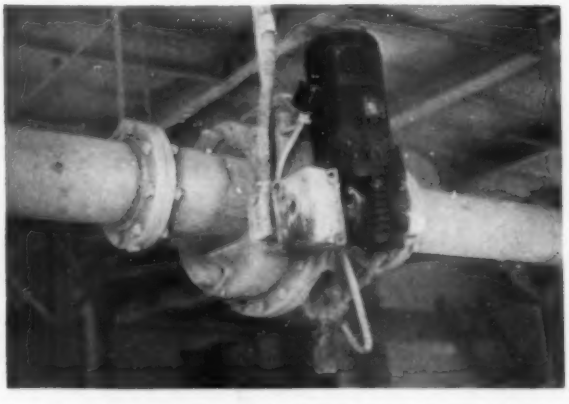


Fig. 54: A motor-operated valve on cement pump line

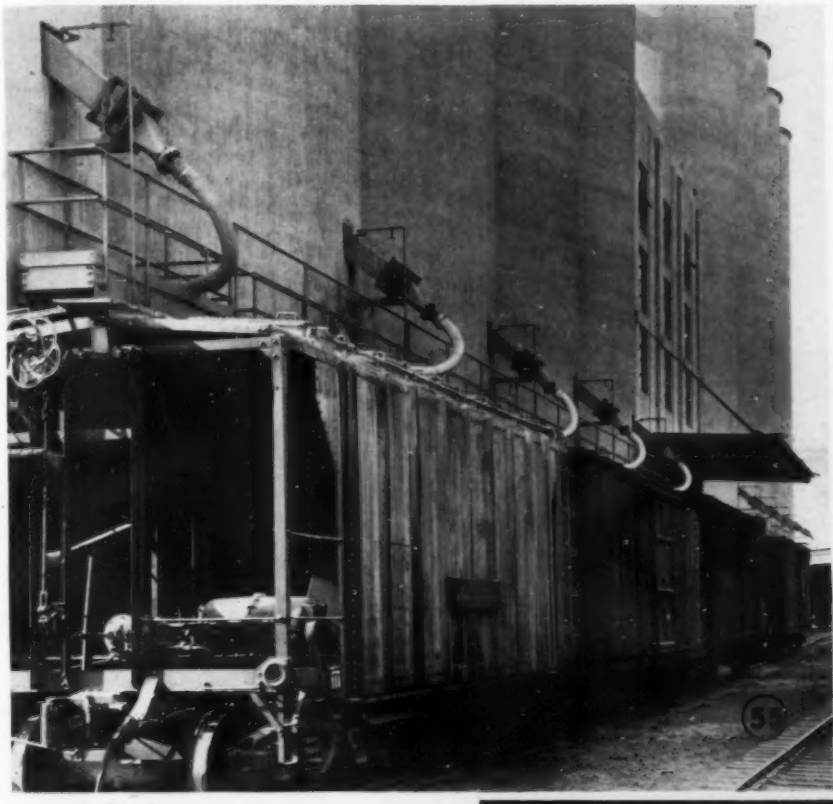


Fig. 55: One side of the silos and pack house showing facilities for loading bagged cement and bulk cement on the same track. The three-story pack house in the center between the silos (15 silos on each side)

Fig. 56: Scale house with automatic carload weighing, for bulk cement—something new in the industry

Fig. 57: Another view of the carloading and car and cargo weighing building

Fig. 58: One of the "end products" of the plant showing dustless wire-mesh conveyor for bags from packing machine to car door

Views showing principal features of pack house facilities at Northampton plant

Packing Cement at Northampton

(Continued from page 80)

loaded with bulk cement stand on a track scale and the carload of cement is pumped into them, with an automatic cutoff when the desired weight is reached. This apparently is another entirely new cement plant feature.

Electric winch car pullers, painted cement gray, are placed on all loading tracks to spot cars. There are five loading tracks, including the one to the carloading scale.

Fuller's Earth

SHIPMENTS of fuller's earth were only two percent less in 1942 than in 1941, in spite of a considerably greater reduction in oil refining activity, according to a Bureau of Mines report.

Texas was the leading fuller's earth producing State in 1942 with 42 percent of the total; the Florida-Georgia district contributed 41 and Illinois 15 percent. The average sales realization of Texas clay was $8.38 per ton as compared with $8.70 for Illinois and $13.14 for Florida-Georgia. Quotations on fuller's earth, however, usually range from $5.50 to $16 per ton in most areas, depending on the mesh size and degree of preparation.

Silver Babbitt Metal

NATIONAL BEARING METALS CORPORATION, St. Louis, Mo., is now producing a silver babbitt as a direct outgrowth of the shortage of tin due to the war. This product, the result of research by Battelle Memorial Institute, is said to have the same bondability and corrosion resistance as that of tin-base babbitts and retain hardness at operating temperatures without squeezing out. The silver is alloyed with a properly balanced lead base babbitt.

Silica Plant Fire

SOUTHERN SILICA MINING & MANUFACTURING CO., Charleston, S. C., reported that a fire had damaged its sand drying plant at Ten Mile near Charleston. The company's offices are located at Columbia, S. C.

Change Name

Brand & Deal, sand and gravel producers of Elkhart, Ind., have changed their name to Deal Gravel Co. This company has been in business for many years.

COMING CONVENTIONS

American Concrete Institute, Chicago, Ill., February 29 to March 2, 1944.

National Crushed Stone Association, Annual Meeting, Hotel New Yorker, New York, N. Y., January 31 to February 2, 1944.

National Ready Mixed Concrete Association, Annual Meeting, Hotel New Yorker, New York, N. Y., January 26 to 28, 1944.

National Concrete Masonry Association, annual convention, Chicago, Ill., February 15-17.

National Sand and Gravel Association, Annual Meeting, Hotel New Yorker, New York, N. Y., January 25 to 27, 1944.

Latest Cement Plant

(Continued from page 48)

there is an excessive consumption of power, but I understand that partly because of the economies achieved in the grinding operations, the power consumption is not out of line with that of other plants.

Practically every piece of heavy equipment in the plant is accessible to an overhead crane of adequate capacity; most of these are traveling bridge cranes. For example there are three of these in parallel bays in the raw grind part of the mill building. Also, there is ample headroom to handle the largest pieces of equipment.

Enough has been said to show that to one mechanically inclined this plant is really a thing of beauty; and from an aesthetic point of view this is equally true. Buildings and structures throughout are architectural concrete or structural steel with cement-asbestos corrugated siding—all light colored, presenting in the fall of the year with the colored foliage, a picture any artist would appreciate. Even the car pullers are painted the same light cement gray.

The writer expresses his appreciation to Henry P. Reid, assistant to the president; to S. J. Robison, chief engineer; to R. L. Walsh, electrical engineer; F. P. Diener, chemical engineer; M. Winsch, plant manager, and L. G. Sprague, chief chemist at the Northampton plant. All contributed to his acquisition of a liberal education at the world's most modern and safest portland cement plant.

Tennessee Phosphate

FINAL FIGURES of the Bureau of Mines, released recently, reduced to short tons of 2000 lb., show that Tennessee shipped or consumed 1,254,801 tons in 1941 and 1,530,295 tons in 1942, an increase of 25 percent. If the rate of increase for 1943 continues the same as for the first half of the year, 1943 will record approximately two million tons or three times the figure of 1930.

An idea of the growth of the use of ground rock by farmers for direct application is given by the fact that while the actual shipment into that consuming channel for first half of 1943 has exceeded that for same 1942 period by over 50 percent, the unfilled orders on the books of the several producers, running into 1944, 1945 and 1946 aggregate over two and one-half times the present installed capacity of the field for grinding, bagging and loading, the bottle neck at present being personnel for bagging and loading.

Kiln Controls

(Continued from page 76)

by instrument manufacturers that it was useless to supply the average cement or lime plant with delicate indicating and recording instruments, because they were seldom protected from dust and vibration and consequently soon went haywire, to the disgust of both user and manufacturer. Here that problem is answered. In the first place, the control panel and housing is placed on a concrete pier separate and distinct from the kiln building floor. In the second place, all the delicate recording instruments are on another panel inside a dust-proof room back of the control board, but visible through plate-glass windows in the control panel. This room is even provided with a duct under one edge of the floor for pulling out any possible dust that might get in when the door is opened.

A study of the control board diagram will show that there is no attempt at over-all "automatic" control. The kiln speed control (Ward-Leonard) and the kiln-feed speed control can be changed at will and the differential tachometer will show the difference in speeds. They can be synchronized or not. The kiln draft control is automatic, since once set it need not be monkeyed with.

The Stabilog on the right-hand side of the control board is another instrument, with the Shallcross controller, for automatic control of the clinker cooler by keeping a constant difference in pressure above and below the clinker bed on the shaker grate. Thus, if the bed becomes too thick the difference will be too great and increasing the speed of the cooler will tend to spread the bed thinner, or vice versa.

Renegotiation Exemption Denied Ready Mix

V. P. AHEARN, executive secretary of the National Ready Mixed Concrete Association, reports that the request of the association that ready mixed concrete be specifically exempted from products subject to renegotiation has been denied by the Price Adjustment Board of the War Department in a recent decision. The decision was based on the fact that, although ready mixed concrete is composed of a simple combination of basic materials already specifically exempted from renegotiation, the mixture was held to be processing. Under Congressional mandate, exempted products are those "which have not been processed, refined, or treated beyond the first form or state suitable for industrial use."

Major W. W. Watts, assistant counsel of the Board, in denying the plea for exemption of the ready mixed concrete industry, said, "While competition with the prime contractor, who would mix his own concrete if prices of your members were too high, tends to keep unit prices below a maximum, nevertheless . . . largely increased volume may result in substantial increases in profits even though there may be a practical limit on unit prices." Under the law, contracts and subcontracts completed and paid for prior to April 28, 1942, are not subject to renegotiation. However, if final payment was not made prior to that date, profits from contracts or subcontracts, states Mr. Ahearn, are subject to renegotiation even though they may have been in force in years prior to April 28, 1942.

Installs Dust Collector

PERMANENTE METALS CORPORATION has installed dust collecting equipment at its Natividad, Calif., plant and quarry. Preliminary tests, it is reported, show an efficiency of 93 percent for its Western Precipitation dust collector on the calcining kilns.

Crushing Operations

(Continued from page 52)

accounts for some of the increased efficiency in the raw grinding department. Old timers in the mining machinery business have long contended that ball mills are inefficient crushers. They are not designed to crush the 1½-in. material usually fed to them. Their efficiency as grinders increases rapidly as the feed approaches ¼-in. size.

W.P.B. Changes Lumber Procurement Ratings

A REVISION has been made in Softwood Lumber Order, M-208, which effects an important change in procedures for lumber procurement. Heretofore producers have had an AA-3 rating under M-208, but with a definite ceiling on lumber purchases under Item 46 in the quota authorizations. Whenever the AA-3 was inadequate, producers were permitted to use the AA-1 rating but deducted, in that event, the value thereof from their quotas for fabricated repair parts and operating supplies.

Executive Secretary V. P. Ahearn of the National Sand Gravel Association advises that under M-208 as amended, the Mining Division, W. P.B. producers should use an AA-1 rating for all lumber requirements, beginning with the fourth quarter of 1943, the extent of such lumber purchases being governed by the specific allowance received by producers in Item 46 for the fourth quarter. The AA-3 rating is no longer applicable for lumber for repair and maintenance work. Whenever lumber is required, however, for new construction, producers continue to have an AA-3 rating.

Fig. 11: Weighing machine which records amount of crushed stone going to storage at Northampton plant of Universal Atlas Cement Co.

Buys Gravel Concern

ELBOW LAKE SAND & GRAVEL CO., Elbow Lake, Minn., is the new name of the former Wahpeton Sand & Gravel Co., which was recently purchased by Sam Olson. Ervin Boe will continue as manager with Gilford Helgeson as his assistant.

BATCHING Speeded Up

Twin City Ready Mixed Concrete Co. uses interesting system of screw, bucket and belt conveyors to move aggregates and cement to plant bins

By RALPH S. TORGERSON

WHEN the Twin City Ready Mixed Concrete Co. built its new plant, every effort was made to lay out the structure and equipment so that materials flow would be centralized from the batching control room over the truck driveway. Plant capacity is about 100 cu. yd. an hour. More than 90 per cent of this company's plant capacity has been devoted to war construction jobs.

Aggregates are dumped by truck into a bin having a capacity of 23 cu. yd., water level. Trucks back up an inclined roadway, and dump the sand and gravel over a grizzly of steel rails into three compartments. A reciprocating feeder controls the flow from the hopper to the long conveyor inclining up to the batching plant bins above where a swiveling spout directs the material into a steel bin having seven compartments, two of which are reserved for cement and the other five for aggregates. The sand compartment holds about 100 cu. yd. and the gravel compartment holds an equal amount.

Cement is received in bulk from special hopper type railroad cars or is dumped by chute from box cars into a short screw conveyor, 18-ft. long, installed at right angles below the track to an enclosed bucket elevator, 23-ft. high, for the first lift. From this bucket elevator cement goes to a second screw, 36-ft. long, and thence to the bucket elevator alongside the plant into a spout connected to the cement compartments, previously mentioned, which hold 800 bbl. of cement.

Batching plant receives bulk cement by screw conveyors and bucket elevators and aggregates by belt conveyor. Fleet of ready mix trucks lined up

The belt conveyor structure is of particular interest. It is 193-ft. 6-in. long, and the belt width is 24-in. It will be noticed in the illustration that the supporting structure comprises steel A-frame supports resting on concrete piers suitably braced with truss members on each side to hold the conveyor bridge members rigidly in place to withstand any wind stress imposed. The belt conveyor structure is covered with steel sheathing, both top and sides, and there is also a covering over the return length of the belt to prevent any possible damage from gravel which might drop off the loaded side of the conveyor belt. This extra precaution for belt protection is particularly important now when conveyor belting is such a highly prized part of the plant equipment. Chain Belt furnished the idlers, and the conveyor structure was built by Barber-Greene. Butler Bin Co. designed and built the plant and bins, and furnished the weigh batching equipment and the water metering equipment which is controlled by weight, the same as the aggregates.

To prevent wear on hopper and chutes, the Twin City Ready Mixed Concrete Co. lined them with a rubber composition. In view of the difficulty of replacing this equipment, it is felt that this added protection has been more than justified. Two electric vibrators supplied by Foundries Supplies Manufacturing Co. are used, one on the cement hopper and the other on the concentrating hopper for dumping into the mixed truck drum. A convex hood slides down around the cylindrical concentrating hopper over the mixer drum opening, preventing the escape of cement dust and the dropping of aggregates into the driveway. This hood is actuated by foot-operated lever from the batching room floor, and is held up

Paving Under Giant Crane Runway for Caterpillar Tractor Company War Plant. Photo Courtesy of Caterpillar, Peoria, Ill.

JAEGER OPERATORS WILL PROFIT FROM THIS LESSON!

War jobs like this, totalling multi-millions of yards of concrete more efficiently mixed and placed with Jaeger Truck Mixers, have fully educated the architect, engineer and contractor to the advantages of "ready-mix" service with this mobile, flexible type of concrete plant.

In coming years, operators of Jaeger Truck Mixers will profit greatly from this lesson, particularly as they continue, in spite of limitations on new truck mixers, to maintain the wartime standard of service they have already set.

Longer life has been built into your Jaegers. Your Jaeger distributor and Jaeger traveling engineers are always available to help you keep your truck mixers rolling smoothly to Victory — and beyond.

THE JAEGER MACHINE CO.

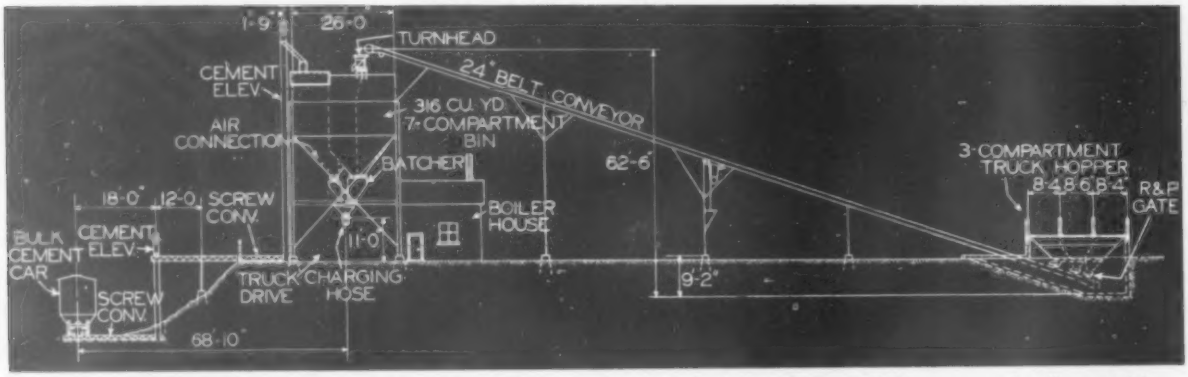
603 DUBLIN AVE.
COLUMBUS, OHIO

RECOMMENDATION 1:

Make each driver responsible for his unit. Send for Jaeger Manuals and insist on operation, cleaning and lubrication as specified therein.

RECOMMENDATION 2:

ARRANGE WITH YOUR JAEGER DISTRIBUTOR FOR A REGULAR 30-DAY CHECK-UP ON EVERY MACHINE.



Elevation plan of ready mixed concrete plant in which screw conveyors, bucket elevators and belt conveyors handle materials

Cement is received in bulk and is moved to the batching plant bins by two screw conveyors and two bucket elevators. Large building to the left is the garage

Looking toward plant from aggregate hoppers. Note completely covered conveyor belt structure to exclude rain and snow

out of the way by a notched piece of angle iron fastened to the floor. Counterweights hold the hood down over the mixer drum opening when in use. A glass plate in the floor permits the batching plant operator a clear view of the truck mixers while at the same time cold draughts of air in winter are excluded.

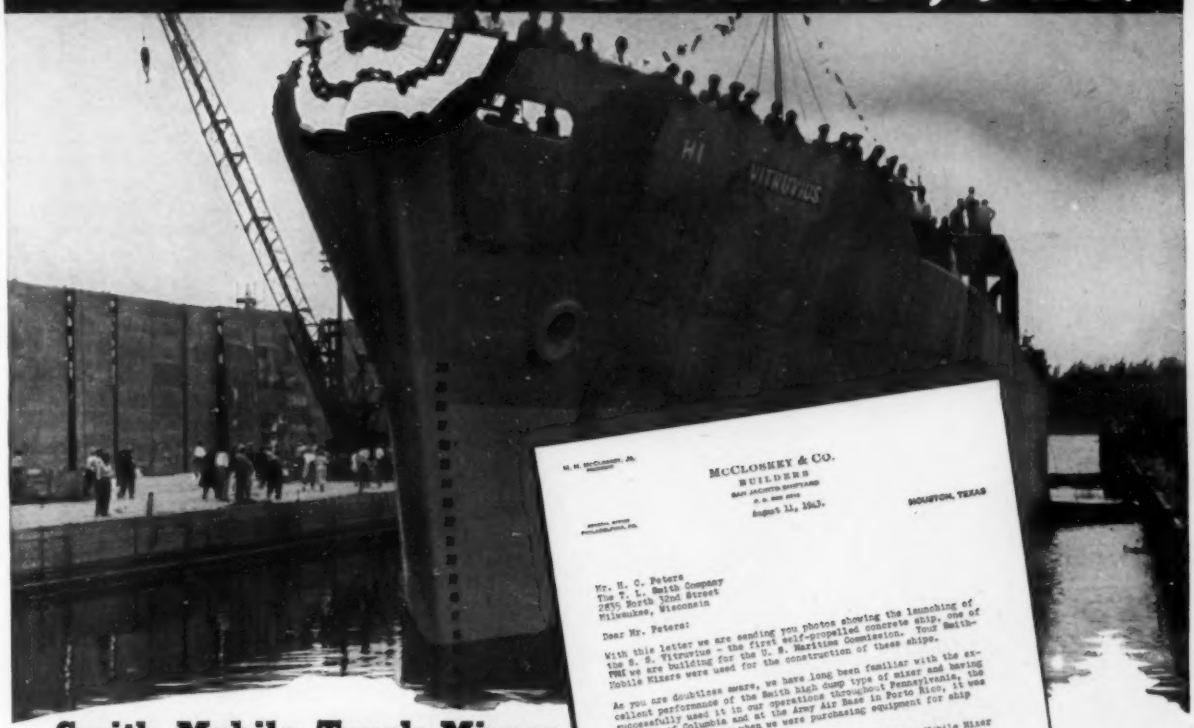
Winter Operation

This batching plant is well-equipped for winter operation. Steam is provided by a 109-hp. Kewanee boiler in the adjacent garage which is fired with an Enterprise oil burner. There are two long cylindrical shaped heaters furnished by the Gruden Co., that supply water at 180 deg. F. These heaters comprise copper coils in the insulated cylinder through which the water circulates. Steam at 12 to 15 p.s.i. circulates around the coils. A Powers regulator on the steam line is set to provide 5000 gal. per hour of hot water at 180 deg. The water tank feeding the water meter holds 125 gal. In the water tank is a booster heater to step up the temperature. Valves permit cooling the water drawn into the tank. Steam coils also are run into the aggregate hoppers in the batching plant. Flow of steam into these coils is regulated by means of a chain-operated gate valve. The batching floor room is heated by Beacon (steam) unit heaters.

Directly back of the batching plant is the garage for maintaining the eight Chain Belt 2½-cu. yd. mixer trucks which are mounted on K-7 International truck chassis. This concrete block structure at one time was used to store coal and house truck equipment. It was purchased by the ready mixed concrete company, and is completely equipped for servicing and maintaining the mixer trucks.

(Continued on page 90)

CONCRETE SHIPS *to Beat the Axis!*



McCLOSKEY & CO.
BUILDERS
San Jacinto Shipyard
P. O. Box 2010
HOUSTON, TEXAS
August 11, 1943.

Mr. H. C. Peters
The T. L. Smith Company
2885 North 32nd Street
Milwaukee, Wisconsin

Dear Mr. Peters:

With this letter we are sending you photos showing the launching of the S. S. Vitruvius - the first self-propelled concrete ship, one of FMC we are building for the U. S. Maritime Commission. Your Smith-Mobile Mixers were used for the construction of these ships.

As you are doubtless aware, we have long been familiar with the excellent performance of the Smith high dump type of mixer and having successfully used it in our operations throughout Pennsylvania, the District of Columbia and at the Army Air Base in Porto Rico, it was our natural selection when we were purchasing equipment for ship construction.

In closing, let me say that our selection of the Smith-Mobile Mixer has been fully justified by its performance at the Hooker's Point Shipyard at Tampa and the San Jacinto Shipyard at Houston, Texas.

With best wishes for your continued successful production of this fine piece of construction equipment, I am

Sincerely,
McCLOSKEY & COMPANY
J. C. McCloskey

Smith-Mobile Truck Mixers Help to Speed up Vital Shipbuilding Program

When McCloskey & Co. obtained the contract for building a large number of self-propelled concrete ships, they used their fleet of Smith-Mobile Truck Mixers for mixing the thousands of yards of concrete required. Past experience on big construction projects, convinced the company that this dependable truck mixer delivers rigid specification concrete, and does it on a fast production basis.

Operators invariably insist on having Smith-Mobile's HIGH DISCHARGE feature, the FEED CHUTE charging that really works, and VISIBLE MIXING that permits inspection of the entire batch before any of the concrete is discharged. It will pay you to get the complete Smith-Mobile story. Write for Catalog 198-B.

The T. L. SMITH CO., 2885 N. 32nd St., Milwaukee 10, Wis.

SMITH-MOBILE

The ORIGINAL HIGH DISCHARGE Truck Mixer and Agitator

A 4190-1P

(Continued from page 88)

Officers of the company are L. V. Madsen, president and treasurer; M. C. Madsen, secretary; and R. T. Lindh, plant manager.

Industrial Sand Association Fall Meeting

THE NATIONAL INDUSTRIAL SAND ASSOCIATION held its annual fall meeting in New York City at the Hotel New Yorker, on Tuesday, November 9, 1943. A more complete report of the meeting will be available in a later issue.

New Mica Grading Method

THE WAR PRODUCTION BOARD has developed a new grading system in cooperation with Bell Telephone Laboratories, Inc., which will permit a wider use of domestic mica in a variety of applications within radio-frequency equipment, for which it had been considered inadequate, and for which India mica had been required. Believing that much of the domestic mica previously rejected because of stains revealed in the traditional eye tests could be used in radio-frequency equipment, the W.P.B. requested the Bell laboratories to investigate the possibility of developing more scientific methods.

Two tests have been developed; one for locating conducting veins in mica and the other for measuring electrical losses. Tests of specimens of domestic mica revealed that a large proportion of the mica formerly relegated to less essential uses could be used in many high-frequency applications. Five sets of instruments required for these tests have been made and the problem of production to reduce costs so that they may be made available to mine operators is now being considered. Although eye tests for waviness, surface roughness, bubbles and other blemishes would not be eliminated, the use of this equipment would permit a complete rewriting of grading specifications and the tapping of the relatively large supply of domestic mica for critical war production purposes.

Big Post-War Market for Phosphates

INTERNATIONAL MINERALS & CHEMICAL CORP., Chicago, in a recent report to stockholders expresses an opinion that there will be an unprecedented demand for phosphates after the war from foreign countries seeking to rehabilitate agricultural areas. International Minerals is now said to be the largest single producer of phosphate rock in the country with a capacity of over 1,000,000 tons a year. The company's potash operations, which played a large part in freeing the United States from dependence on Germany, also are expected to grow.

Reopen Lime Plant

D. & D. LIME CO., Summitville, Tenn., is the name of a new concern which has resumed operation of the old Tennessee Cement & Lime Co. property near Manchester, Tenn. J. D. Sain and T. D. Baker are the new owners. The company is now producing crushed stone and gravel for road building and other uses. Plans also have been formulated to obtain machinery to produce burned lime. At one time the Summitville plant employed 125 men, and was a heavy producer of lime and crushed stone. Ample supplies of stone are available.

Open S. Dak. Quarry

H. E. EYRICH, superintendent of the F. E. Schundler Feldspar Co., Inc., Custer, S. Dak., recently visited the Guernsey, Wyo., quarry of the company where a new churn drill and other equipment has been installed, according to a local report. Seventeen men are employed at the quarry.

CONCRETE PRODUCTS AND CEMENT PRODUCTS

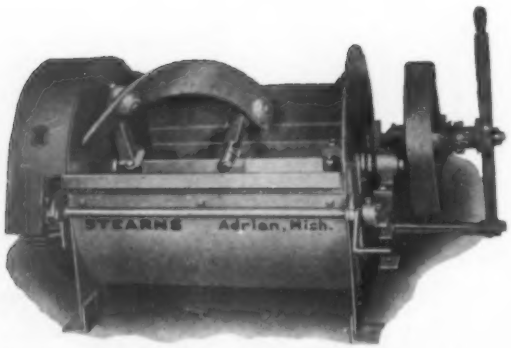
Glass-Faced Concrete Block In Chicago Subways

Chicago subway station walls lined with Glastone, a product of Libbey-Owens-Ford Glass Co., and American Concrete Corporation

STEARNS EQUIPMENT *fights* INFLATION

In hundreds of concrete products plants, Stearns material handling, mixing and block making equipment is waging a successful battle against the dangerous trend of rising costs — ***inflation.*** From storage bins to curing rooms, Stearns Skip Loaders, Mixers and Clipper Strippers are eliminating man power and waste motions, reducing maintenance to a bare minimum, producing more good blocks per man per hour than other equipment of comparable price. They are literally ***"holding the line"!***

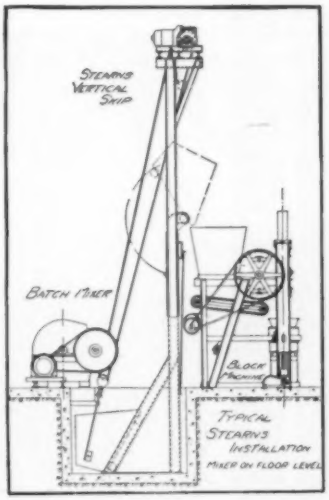
First in their field to win the Army-Navy "E" Award and the Treasury Bullseye flag — signal honors that make Stearns humbly aware of their responsibilities.



STEARNS MIXERS The mixer with interchangeable, renewable, bar type liners of tough, abrasion resisting level. "Sterloy" ribbon blades. Heavy steel shell, electrically welded to steel ends. Quick opening, tight locking door. Low charging height. Large ball bearings perfectly shielded. Pulley, V-Belt or Gear-Head Motor Drive. Skid or truck mounting. Six sizes—3, 12, 18, 28, 42 and 50 ft.

STEARNS SKIP LOADER for charging dry materials into elevated mixers or for elevating mixed concrete to feeding hoppers. Independent motor and mixer drive types. May be used with any make of mixer. Proper track and cable lengths permit wide range of application.

Tell us the equipment you are interested in and we'll gladly send you covering literature.



Permit us to assist you with proper priority procedure

STEARNS

GENE GLOEN, PRESIDENT

Manufacturers of the famous Jeltcrete vibration block machine, tamp type block and brick machines, batch mixers and skip loaders. Licensed under the basic Geibman vibration patents.

Concrete for Chicago Subways

Glass-faced concrete block lines subway station walls. Million barrels of cement and million cubic yards of aggregates for tubes

CHICAGO celebrated the opening of its subway transportation system October 16 with many notable guests in attendance and a big parade. Included in the parade were amusing relics of past modes of transportation in the city; the Indian pony, covered pioneer wagon, buggies of all descriptions, horse car, cable car, and on up to the latest in surface transportation.

The subway itself is representative of the latest advances in construction and particularly in the use of concrete. Subway routes in State street and Dearborn street now completed comprise 8.75 miles of double-track. Due to war conditions and the difficulty of obtaining certain materials and subway rolling stock, only the State street route is being placed in operation although the Dearborn street route is completed as far as structural work is concerned. This initial construction is only part of a comprehensive plan of subway routes extending to various sections of the city. Almost 50 miles of additional subways are planned as extensions of the initial system. Present construction is mainly designed to relieve the transportation load in the downtown area and through congested districts adjacent to this section.

A few details regarding construction should be of general interest. Approximately 1,000,000 cu. yd. of sand and gravel and crushed stone were used in constructing the subway tubes. About 1,000,000 bbl. of cement were required for the concrete. The single tube in the so-called downtown loop is 20 ft. 5 in. in diameter with a top and wall thickness of 2 ft. 2 in., and a bottom thickness of 4 ft. 3 in.; the outlying tubes will be 15 ft. wide and 16 ft. 9½ in. high, with a top thickness of 20 in., and wall and bottom thicknesses of 2 ft. 4 in. About 1100 cu. yd. of colored concrete were used as a surfacing in the stations. The floors of the mezzanine public area and platforms are of a non-slip reddish-brown colored concrete with the stairs of the same colored concrete. Platforms have white concrete edges. Station columns are concrete cores covered with a black Vermont marble veneer.

Of particular interest to concrete products manufacturers is the glass-faced concrete block used for wall-facing and free-standing partitions in 13 stations of the State street subway and two stations of the Dearborn street subway.

Glass-Faced Concrete Block

Glastone, as it is called, is a product of Libbey, Owens, Ford Glass Co., Toledo, Ohio, and American Concrete Corporation, Chicago, Ill. It is a specially prepared, load-bearing lightweight concrete block with a facing of Vitrolite structural glass. This facing is bonded with a 100 percent coverage of water-proof adhesive ⅛ in. thick, applied under pressure and anchored to the concrete backing with a rust-resisting metal edge binder extending around the entire perimeter.

Although the Glastone concrete tests better than 2000 p.s.i. over the gross area, it only weighs from 90 to 100 lb. per cubic foot. Four-inch Waylite concrete has approximately the same insulation value as 8 in. of brick, and its natural concrete affinity for mortar develops unusually high joint strength.

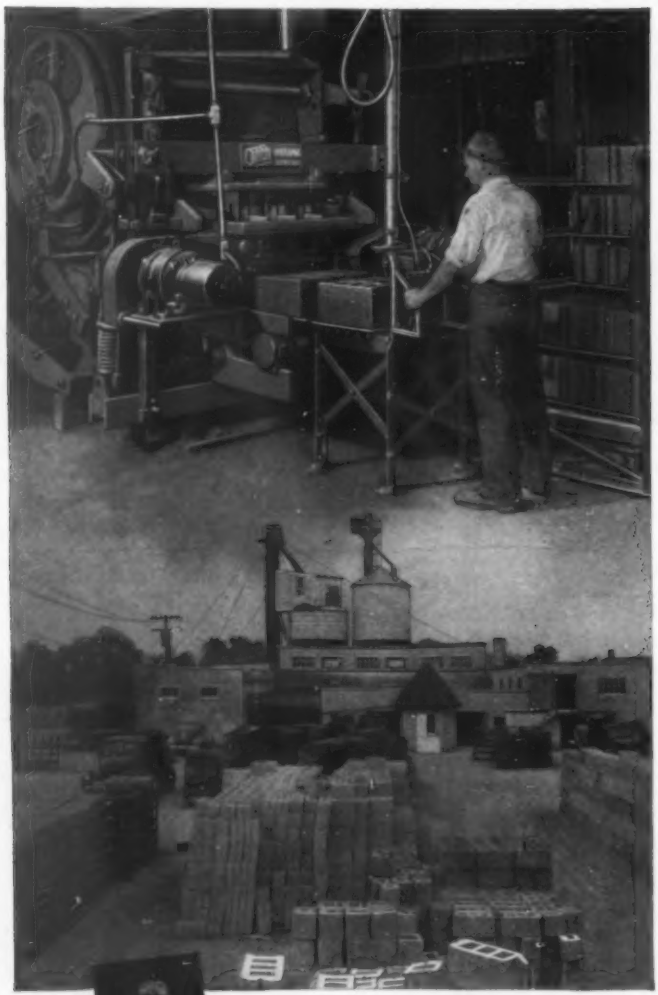
Because its facing is of glass, the

(Continued on page 100)

Hedrich-Blessing Studio

Left: Application of thin-slab grey Glastone to existing concrete walls with the use of mortar and brass or copper anchors. Right: Utilizing the load-bearing Gladstone units. Here units 4½ in. thick are used in the self-supporting partition. Slabs are set with anchors and dowels

LEADERS in the Concrete Products Industry



Mr. H. J. Schmitz, President, Cement Products Company

This is the 23rd of a series of advertisements featuring leaders in the concrete products industry who have installed Besser Vibrapacs to step up production of high quality concrete masonry units. Reprints of previous advertisements sent on request.

*

Cement Products Co. of Mansfield, Ohio, has been manufacturing concrete blocks since 1920 and leads the industry in that area. In February 1942 they installed a Besser Super Vibrapac to meet increased production demand, and further perfect their product. They furnish concrete masonry for farm building construction in adjacent territory, but about 90% of present production is for war building construction.

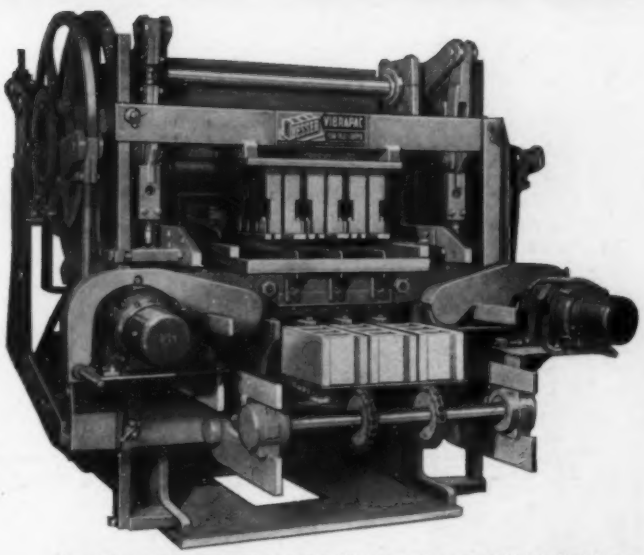
—using Besser Plain Pallet VIBRAPACS in War Production

Concrete Masonry Units For Beautiful Interiors

Vibrapac concrete masonry units in the hands of skilled architects and builders have become in effect a new building material.

Beautiful and impressive church, theatre, school and other public building interiors can be achieved with the artistic use of exposed Vibrapac concrete masonry.

Exposed natural Vibrapac concrete masonry lends charm and restful atmosphere to home interiors.



Besser Super Automatic Plain Pallet Vibrapac. Capacity 600 8"x8"x16" per hour made 3 at a time on one plain pallet. Smaller units made in larger multiples on the same pallets. Power hoist makes off-bearing easy.

Important Patent Notice

Licensed under the Geibman basic vibration patents.

Undirectional vibration licensed under Flom patents.

The Vibrapac combines vibration with exclusive patented Besser Plain Pallet principle.

BESSER MANUFACTURING CO.

211 Forty-Third St. • Alpena, Mich.

Complete Equipment for Concrete Products Plants

THE SAVING IN PALLET COST WILL PAY FOR A BESSER VIBRAPAC PLAIN PALLET STRIPPER

MERCHANDISING

Selling the Farmer by Mail

Chicago Insulcrete Co. sells concrete products for complete buildings made on a delivered basis

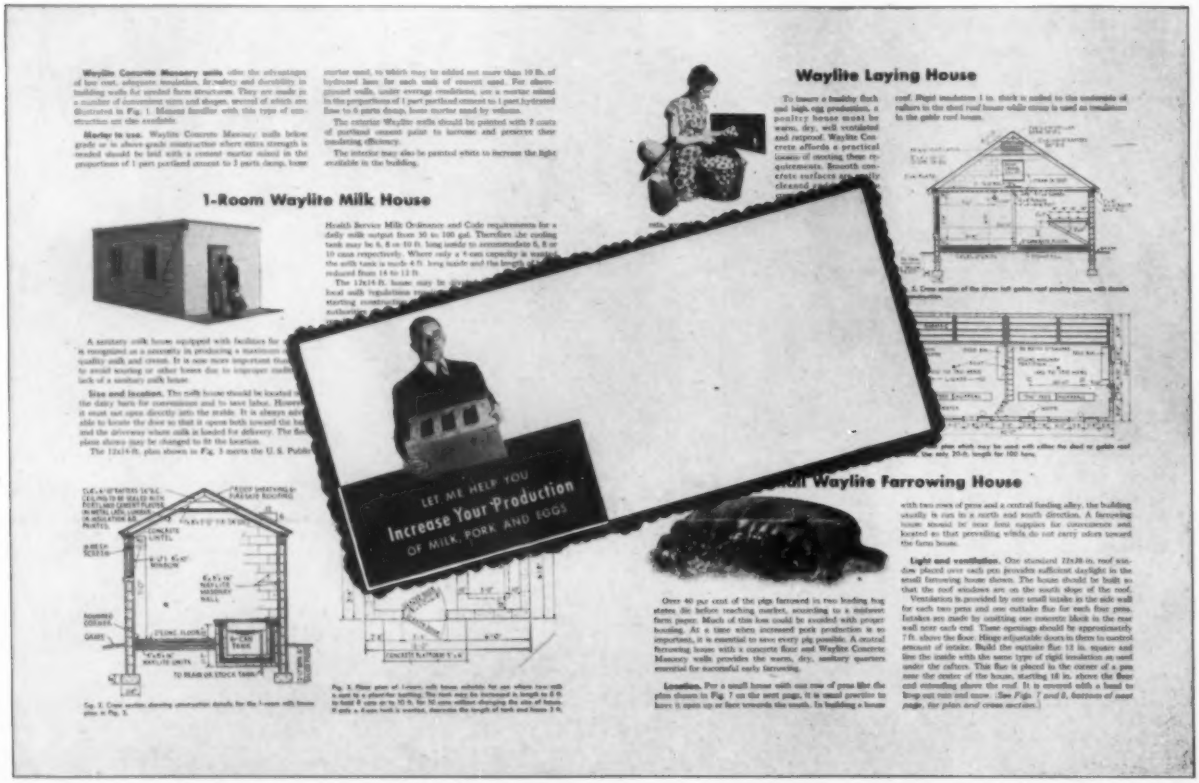
By RALPH S. TORGERSON

When the Portland Cement Association started its campaign to induce farmers to use more concrete in modernization of old buildings and the construction of new buildings, Henry Bucholz, president of Chicago Insulcrete Co., Franklin Park, Ill., and Bill Potts of The Waylite Co., decided to cash in on it by doing a little advertising in their own interests.

The Portland Cement Association had prepared some interesting mailing folders on various ways the farmer could use concrete to advantage in improving his buildings and increasing his livestock and grain production. These folders were printed on different colored paper, and showed construction details, dimensions, etc.

Chicago Insulcrete Co. decided that three of these folders could be combined into one mailing folder which, opened up, would present three pages 8½- x 11-in., and a third of a page showing construction details of a hog house. This folder was a combination of the three folders prepared by P.C.A. entitled, "How to Build a 1-Room Concrete Milk House," "How to Build a Small Farrowing House," and "How to Build a Concrete Laying House for 100 Hens," with some additional information directly applicable to Chicago Insulcrete's Waylite concrete products. When folded for mailing, the dimensions were 3¾- x 8½-in.

In addition to the folder, a white insert sheet was placed within the fold having printed on it a detailed bill of materials showing the number and size of various concrete masonry block, sills and lintels required for each type of building illustrated with the total cost of the units delivered within Cook, DuPage, Kane and Lake counties. If the farmer makes an



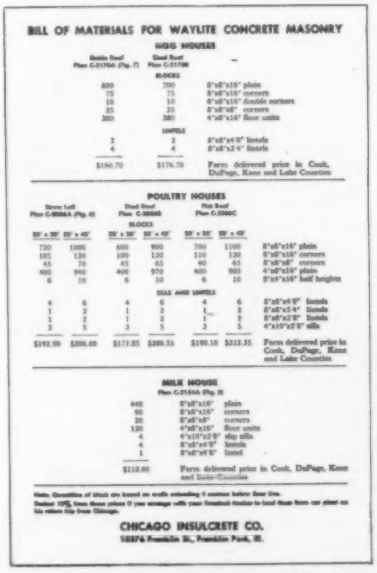
Mailing folder interior giving details of milk house, hen house, and hog house. Insert shows the frontispiece of folder with President Bucholz holding a lightweight concrete block

Trucks pulling out with loads of concrete block from the street entrance to Chicago Insulcrete Co. office. Plant may be seen in the background

arrangement with a livestock trucker to pick up the block at the plant for a return haul, the farmer is permitted to deduct 10 percent from the prices quoted.

If larger type farm buildings are desired, it is necessary to quote special prices but the quotations cover structures of average requirements and the farmer can get a pretty good estimate of what his cost will be by referring to the folder. The big advantage of this type of selling is that it offers a method of practically selling a complete package similar to any commodity.

Chicago Insulcrete Co. has sold concrete units for 50 poultry, hog and other farm houses through these mail folders. Surprisingly these folders also have developed the sale of concrete products for several industrial buildings. Orders are still coming in that are directly traceable to this folder.



BILL OF MATERIALS FOR WAYLITE CONCRETE MASONRY

HOG HOUSES

BLOCKS

600	700	8"x8"x16" plain
75	75	8"x8"x16" corners
10	10	8"x8"x16" double corners
35	35	8"x8"x8" corners
300	300	4"x8"x16" floor units

LINTELS

2	2	8"x8"x4'0" lintels
4	4	8"x8"x3'4" lintels
$186.70	$176.70	Farm delivered price in Cook, DuPage, Kane and Lake Counties

POULTRY HOUSES

Straw Loft Plan C-8886A (Fig. 6)		Shed Roof Plan C-8886B		Flat Roof Plan C-8886C		
BLOCKS						
20' x 30'	20' x 40'	20' x 30'	20' x 40'	20' x 30'	20' x 40'	
720	1000	600	900	700	1100	8"x8"x16" plain
105	130	100	120	110	130	8"x8"x16" corners
45	70	45	65	40	65	8"x8"x8" corners
600	900	600	970	600	900	4"x8"x16" plain
6	10	6	10	6	10	8"x8"x16" half heights
SILLS AND LINTELS						
4	6	4	6	4	6	8"x8"x4'0" lintels
1	2	1	2	1	2	8"x8"x3'4" lintels
1	2	1	2	1	2	8"x8"x2'8" lintels
3	5	3	5	3	5	4"x10"x2'8" sills
$192.90	$265.60	$172.85	$260.55	$190.10	$232.35	Farm delivered price in Cook, DuPage, Kane and Lake Counties

MILK HOUSE

440	8"x8"x16" plain
60	8"x8"x16" corners
20	8"x8"x8" corners
120	4"x8"x16" floor units
4	4"x10"x2'8" sip sills
4	8"x8"x4'0" lintels
1	8"x8"x4'8" lintel
$110.00	Farm delivered price in Cook, DuPage, Kane and Lake Counties

CHICAGO INSULCRETE CO.

Complete bill of materials for the three types of farm buildings is enclosed with the folder

Commercial Masonry Cements

AT THE TIME of the investigation of 41 commercial masonry cements reported in the *Journal of Research* of the National Bureau of Standards (December, 1934), additional mortar specimens were set aside for tests at a later age. Recently, Raymond L. Blaine made compression tests on 2-in. mortar cubes of these cements after both water and air storage for 10 years.

The compressive strengths of the 1 to 3 (cement to standard 20-30 sand) mortar cubes varied from 200 to 6,000 lb./in.^{2} The mortars made of cements originally classified as largely portland, portland plus unknown additions, and portland cement-hydrated lime mixes, had greater compressive strength at 10 years after air storage than after water storage. The mortars made of these types of cements had very little increase or a slight decrease in compressive strength between the periods of 1 and 10 years of water storage, but had appreciable strength increases in air storage for the same period.

Mortars made of cements classified as natural cements, and largely slag cements had greater compressive strengths after water storage than after air storage. The mortars made of the natural cements increased only slightly in compressive strength while those made of the slag cements decreased slightly between the 1- and 10-year periods of air storage.

The compressive strength of the mortars made of the cements of the other classifications were too scattered to permit a general statement.

The proportions of cement to sand and gradation of the sand affected both the 10-year strengths and the rate of strength increase between 28 days and 10 years. Many of the cements had lower compressive strength values at 10 years than at 1 year under one or the other storage condition.

The linear expansion of the mortar specimens varied from 0 to 0.808 percent. Cements of greater magnesia contents showed a tendency toward greater expansion. All the mortar speciments made of cements having less than 4 percent magnesia had linear expansion of less than 0.04 percent in 10 years of water storage.

Concrete Tanks

BIDS are being received by the Coast Guard at Miami, Fla., for the construction of concrete tanks at an unannounced location. All the armed services have built concrete tanks for many purposes which were formerly constructed of steel.

Massey Buys Site for New Plant

THE MASSEY CONCRETE PRODUCTS Co. has taken an option on 12 acres of land at New Brunskick, N. J., and plans are being made for the construction of a plant with 25,000 sq. ft. of floor area. Construction is dependent upon priorities for building materials. This company has large plants in Newark, N. J., Birmingham, Ala., and Pittsburgh, Penn.

Oklahoma Minerals Conference

THE OKLAHOMA MINERAL INDUSTRIES CONFERENCE will hold a meeting on either December 1 or 2, depending upon the availability of a meeting place, and Tulsa has been selected as the location. The general theme for the program will be "Present Situation and Post-War Outlook of Oklahoma Mineral Industries."

Share Your ROCK PRODUCTS

• Because of Government restrictions on paper consumption, fewer copies of ROCK PRODUCTS are being printed, therefore, if you do not file your copies, please pass this copy along so that some other person in the industry may profit from the information it contains.

INDIA TESTS SPUN CONCRETE POLES

Shows temporary deflection of 60-ft. spun concrete pole at a load of 5510 lb. Method of jacking pole at butt end and also method of loading used while testing pole is illustrated

• Indian Hume Pipe Co., Ltd., Bombay, India, subjects concrete poles to severe deflection tests

CONCRETE is being used extensively throughout India for highways, buildings, sewage and drainage projects. The extremely heavy rainfall and relatively high cost of lumber in many districts has led to the increasing use of concrete due to its weather and insect resisting qualities and low cost.

Utility poles of all kinds are made of concrete. At the Bombay factory of the Indian Hume Pipe Co., Ltd., some interesting tests were recently made of a spun concrete pole which were recorded in the *Indian Concrete Journal*. This company is a large manufacturer of concrete pipe under the patented spun process, and the poles were made by the same method. The Lewistown Pipe Co., Ft. Wayne, Ind., and Hillside, Ill., makes a high pressure water pipe by the spun process which was described in ROCK PRODUCTS, May, 1941, p. 74. A very dense, hard concrete is produced by this method.

As shown in the illustration, the spun process concrete pole made in the Bombay, India, factory was subjected to a severe deflection test. The overall length of the pole is 60 ft. Temporary deflection and permanent set readings were noted at various loads. In the report, it was stated that the pole was subjected to a working load of 2200 lb., a crippling load of 5500 lb., and a breaking load of 7700 lb. The load was applied a distance of 1½ ft. from the top of the pole.

In making the test, the pole was gripped at the butt end for a distance of 9 ft. 11 in. (depth to which pole is placed in the ground) between two built-up frames by means of three jacks. The pole was supported on five rollers spaced evenly from the point where the jacks held the lower end of the pole in place to the top of the pole. The rollers were placed to slide over smooth-faced planking.

A wire rope was securely attached near the top of the pole and passed around the pulley, attached at the top of a vertical post, the end of the rope being tied to a weighing pan to which loads were added gradually as required. As the loads were added, the top end of the pole was deflected more and more.

Reports of the inspecting engineers indicate that the temporary deflection and permanent set readings taken at various loads were very satisfactory. All the surface hair cracks disappeared after the crippling load was removed, and the pole has a permanent set reading of 2.8 in. only at that load (5500 lb.), which was reduced to 1.8 in. after five hours, and the pole was still sound after the crippling load had been removed. Slightly more load would have damaged the pole permanently. This was not done, however, as the pole has a guarantee factor of safety of 2.5.

Looking toward butt end of pole under deflection test

Special Portland Cements Production Figures

FIGURES on special portland cements in the United States in 1942 as reported by the Bureau of Mines show a production of 7,523,647 bbl., of high-early-strength cement with an average value of $1.94 per bbl. Masonry cements, which are mixtures of portland cement and lime, show a total production from 48 mills in 1942 of 2,067,370 bbl., at an average value of $1.50 per bbl.

Low and moderate-heat portland cement production in 1942 amounted to 13,020,467 bbl., at an average value of $1.43 per bbl.

Portland-puzzolan cements, made by adding pumicite, slag, or other materials to portland cement, showed a production in 1942 of 324,002 bbl., with an average value of $1.41 per bbl.

White portland cement production in 1942 totaled 345,613 bbl., at an average value of $3.97 per bbl.

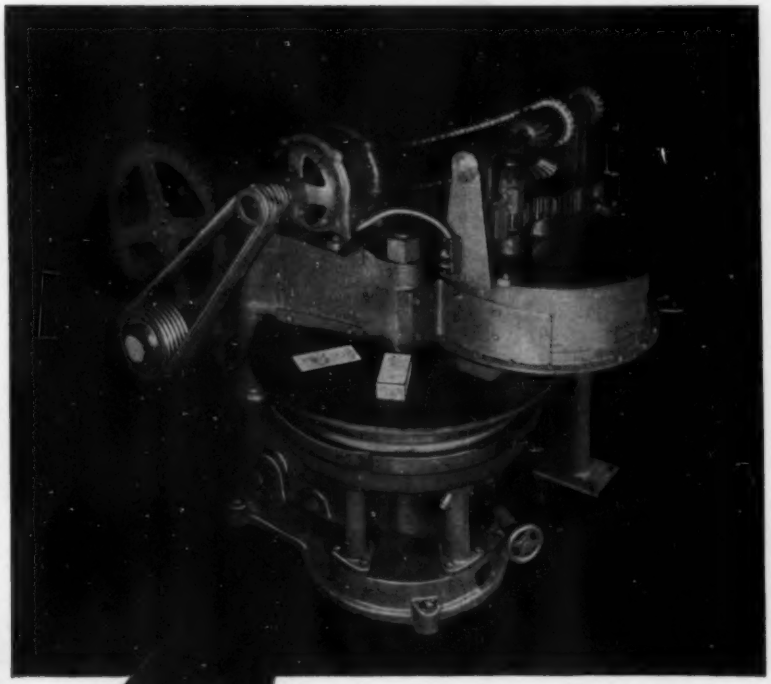
Oil well portland cement production in 1942 amounted to 537,541 bbl., having an average value of $1.99 per bbl.

Sulfate-resisting portland cement production in 1942 totaled 79,835 bbl., with an average value of $1.78 per bbl.

To Make Silo Staves

NEW HAMPTON SILO CO. is the name of a new concrete stave silo company which has been organized for operation in New Hampton, Iowa. This company will be affiliated with the Rochester Silo Co., Rochester, Minn. An office building is now in process of erection at New Hampton, and a 32- x 65-ft. factory, fully equipped, will be ready for operation in a short time. A. M. Russell will be in charge. The company also will manufacture concrete block.

28,000 BRICKS IN ONE EIGHT HOUR SHIFT WITH THE J&C BRICK MACHINE



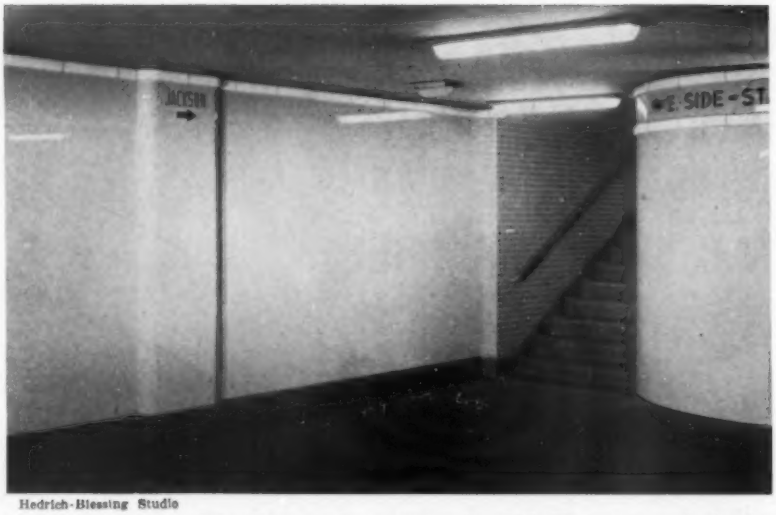
Either frog-type or solid concrete bricks can be produced at the rate of up to 14,000 in an eight hour day (on model C machine shown here) or up to 28,000 per day on the larger type A machine.

Smart operators find Jackson & Church units to be highly profitable installations. They eliminate the need for costly pallets. Gravel pit fines are ideal for brick making in a J & C press.

Below: Because of their even texture, sharp, square corners and perfect uniformity, Jackson-made bricks are winning the praise of contractors and architects from Maine to California.

Above: The Jackson and Church plant shown above was constructed of J & C made bricks. Producers find that J & C made bricks are easier to sell because of their uniformity, quality and appearance. J & C units produce plain or colored bricks from Haydite, Waylite, Superock, Pottsco, cinders and other light weight aggregates. From a single sack of cement, with a J & C machine, up to 320 concrete bricks can be made, with strengths as high as 3700 pounds per square inch and absorption as low as 6%. For complete information write to Jackson and Church Co., Saginaw, Mich.

JACKSON AND CHURCH COMPLETE BRICK-MAKING PLANTS



Hedrich-Blessing Studio

General view of one of the Chicago subway stations in which Glastone is used, showing how it is employed for straight wall facings and in curved, free-standing partitions

Subway Concrete Products

(Continued from page 93)

Glastone block surfaces are nonporous and thus easy to clean, and facings remain brilliant through the years. The units are large, thus eliminating joints. Glastone slabs are manufactured in sizes having a surface area up to 12 sq. ft. The flat, raised shoulder of the metal binder around the Glastone block also serves as a separator freeing the glass facing from pressure or load from any direction, eliminating contracting or expanding effects. The product is available in a wide range of colors.

For the Chicago subway stations, however, the units are a light gray color Vitrolite glass facing on lightweight concrete. The wall-facing units are 18- x 32-in., and have a total thickness of 1½ in. with glass 11/32 in. thick. The units are also curved and are of different sizes for various purposes. The partition units are 4½ in. thick, including vitrolite glass, but some were up to 6½ in. thick. About 22,000 sq. ft. of Glastone units were used in the subway stations.

Company Pays 3 Percent Transport Tax

THE UNITED STATES Supreme Court refused to entertain an appeal of U. S. Gypsum Co. from the emergency court of appeals dismissal of a complaint against an O.P.A. ruling that the company absorb the 3 percent tax levied under 1942 revenue law against transportation of its products.

The company contended that under its contracts delivery of its products to the railroad or the carrier which transports the goods to the customer is equivalent of delivery to the customer who must pay the freight in order to get shipment.

The company contended further that the O.P.A. ruling that it pay the 3 percent tax on the freight bill rather than the customer is equivalent of a reduction in prices of 3 percent below what it considered to be normal price level.

By refusing to consider the appeal the U. S. Supreme Court requires the company to follow the O.P.A. order and absorb the transportation tax.

To Build Bag Plant

THE ST. REGIS PAPER CO., New York, N. Y, recently completed plans for the construction of a new multi-wall paper bag manufacturing plant in North Kansas City, Mo. This expansion has been made necessary to meet heavy demands for paper bags to carry chemicals, fertilizers and building materials for essential civilian requirements and sustenance of the armed forces. Government approval has been given for the project. It is expected that the plant will be in production early in 1944. St. Regis also manufactures automatic bag packing machines and bag closing equipment.

Pavement Yardage

AWARDS of concrete pavement for September, 1943, have been announced by the Portland Cement Association as follows:

Square Yards Awarded During September, 1943

	Sq. Yds.
Roads	1,385,382
Streets and Alleys	1,168,856
Airports	4,295,847
Total	6,850,085

Mineral Wool Production Exceeds Half Million Tons

CONSERVATION of fuel for military purposes, industrial plants, and homes has stimulated the production of mineral wool manufacturers to the point where production in 1942 exceeded a half million tons valued at $33,000,000, according to Bureau of Mines figures.

A total of 41 companies, operating 52 plants in 18 States turned out 513,072 tons of mineral wool products for insulation and other purposes valued at $31,656,927, and 5,624,106 linear feet of pipe covering valued at $1,149,881. Most of the plants operated at peak levels throughout the year. However, at present plants are operating only at about 75 percent of their potential capacity, owing to a lack of man-power and inability to secure replacements for worn-out equipment.

Recognizing the value of well-insulated equipment, the War and Navy Departments have specified use of mineral wool insulation in military equipment such as tanks, trucks, airplanes and ships.

The 52 plants of the United States last year utilized 11 types of raw materials, which included slag, 39 companies; limestone 23; wool rock 18, glass batch 8; shale 6; clay 6; silica rock 3; pit gravel 2; and dolomite, iron ore, and sandstone, 1 each. Improvements in melting technique increased the output of mineral wool per ton of fuel from 21 to 1 to about 4 to 1 as an average, with a maximum of 6 to 1 in several plants.

Convention Plans

DEFINITE DATES and more details regarding the National Sand and Gravel Association and National Ready Mixed Concrete Association annual conventions have been released by Executive Secretary V. P. Ahearn. The sand and gravel industry will hold its sessions at the Hotel New Yorker, New York City, on January 25, 26, and 27, 1944. Ready mixed concrete producers will hold their meetings at the same hotel, but its sessions will be on January 26, 27 and 28. There will be a joint session on January 26 on questions of common concern, the speakers being Maj. Gen. Philip D. Fleming, Administrator, Federal Works Agency, on the post-war public works program; Col. Willard T. Chevalier, publisher of Business Week, on the post-war world in which business will function; and Thomas S. Holden, president, F. W. Dodge Corporation, on the construction outlook for 1944. There will be no exhibits, however, the manufacturers will hold a reception on the first day of the convention.

Sand-Lime Brick Production and Shipments

FOUR active sand-lime block and brick plants reported for September and four for August, statistics for which were published in October, 1943.

AVERAGE PRICE FOR SEPTEMBER

	Plant Price	Delivered Price
Detroit, Mich.	....	$16.00
Saginaw, Mich.	$13.00	....
Grand Rapids, Mich.	....	15.00
Seattle, Wash.	19.50	21.50

STATISTICS FOR AUGUST AND SEPTEMBER

	*Aug.	**Sept.
Production	1,121,500	1,229,025
Shipments (rail)	....	716,000
Shipments (truck)	1,129,316	434,025
Stocks on Hand	90,000	83,000
Unfilled Orders	965,000	860,000

*Four plants reporting: incomplete, two not reporting stocks on hand and two not reporting unfilled orders.
**Four plants reporting: incomplete, one not reporting stocks on hand and two not reporting unfilled orders.

Business Paper Digest

BESSER MANUFACTURING CO., Alpena, Mich., is issuing for free distribution a digest of articles from current trade publications which it calls *The Besser Digest*. It is of convenient pocket size.

Grinding Feldspar

(Continued from page 43)

down to a minimum. To reduce dust throughout the plant, all bucket elevators, chutes, crusher openings are enclosed in wooden or steel enclosures, and the dust laden air is drawn to the Norblo collector.

All electric motor drives on crushers and screens are equipped with Gates V-belts. These drives have stood up well in spite of the fact that they are subjected to operation under abrasive dust conditions.

Officers of the company are J. W. Magnuson, president; V. E. Magnuson, secretary-treasurer; and A. T. Magnuson, superintendent.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912, and March 3, 1933

Of ROCK PRODUCTS, published monthly at Chicago, Illinois, for November 1, 1943.

State of Illinois, County of Cook, ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared Charles Hoefer, Jr., who, having been duly sworn according to law, deposes and says that he is the Business Manager of Rock Products and that the following is, to the best of his knowledge and belief, a true statment of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

Publisher—Tradepress Publishing Corporation, 309 W. Jackson Blvd., Chicago, Ill.

Editor—Nathan C. Rockwood, 309 W. Jackson Blvd., Chicago, Ill.

Managing Editor—Ralph S. Torgerson, 309 W. Jackson Blvd., Chicago, Ill.

Business Manager—Charles Hoefer, Jr., 309 W. Jackson Blvd., Chicago, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Tradepress Publishing Corporation, 309 W. Jackson Blvd., Chicago, Ill. The stockholders of the Tradepress Publishing Corporation are John R. Thompson, 2511 Coyle Avenue, Chicago; J. L. Frazier, 2043 Orrington Ave., Evanston, Ill.; Col. J. B. Maclean, 7 Austin Terrace, Toronto, Ont., Canada; Horace T. Hunter, 120 Inglewood Drive, Toronto, Ont., Canada; The Maclean Publishing Co., Ltd., 481 University Avenue, Toronto, Ontario, Canada.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds or other securities than as to stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is: (This information is required from daily publications only.)

CHARLES HOEFER, JR.,
Business Manager.

Sworn to and subscribed before me this 20th day of September, 1943.

(Seal) M. E. JOHNSTON.
(My commission expires Oct. 20, 1945.)

Metal Congress Meeting In Chicago

THE AMERICAN INSTITUTE OF MINING ENGINEERS held a regional meeting in Chicago, October 16 and 17 in connection with the American Society for Metals and the National Metal Congress. An interesting exhibit showing advances in metallurgy and products was held in connection with the meetings at the Palmer House.

Papers of interest to many rock products producers were presented at the A.I.M.E. sessions. These papers included the "Pidgeon Process," by R. L. Sebastian, W.P.B.; "The Basic Magnesium, Inc., Operations in Nevada"; the "Hansgirg Process at Permanente," by T. A. Dungan, Permanente Magnesium Corporation.

There was also a session by wire rope manufacturers. Carl E. Johnson, president of the Wire Association, gave the opening address. Session chairmen were E. W. Gunstrom, Rome Cable Corporation; R. B. Whyte, MacWhyte Co.; Fred M. Crapo, Indiana Steel & Wire Co. Speakers included John C. Aiken, Jones & Laughlin Steel Corporation; E. J. Crum, Bethlehem Steel Co.; and Rodman R. Tatnall, Wickwire Spencer Steel Co.

Dolomite for Magnesia

A COMPREHENSIVE REVIEW of the uses of dolomite as a source of magnesia has been prepared by the United States Bureau of Mines under the title, "Information Circular 7247, Economic Considerations in the Recovery of Magnesia from Dolomite," by Alvin Schallis. Dr. Sayers, Director of the Bureau, commenting on the circular, said, "Dolomite, which is abundant in the vicinity of many industrial centers, may be treated economically to yield any desired grade of magnesia. It is likely, therefore, that dolomite soon will be one of the more important sources of this material."

Other Sources of Magnesia

While magnesite is a leading source of magnesia in the United States today, most of the known domestic commercial magnesite deposits are far from principal consuming areas and transportation costs must be added to manufacturing overhead. Reserves of magnesite are not great and at the present rate of consumption will be depleted in a few decades, the Bureau reports.

Utilization of lower-grade magnesite will necessitate employing increasingly expensive beneficiation methods. Despite this, however, magnesite undoubtedly will continue for some time to be the most economical source of magnesia in areas adjacent to its production.

The Bureau publication reviews the general economic considerations involved in utilizing dolomite, and raw materials, properties of products, plant location, and manufacturing processes are discussed from a marketing viewpoint. By-product sources of magnesia also are emphasized and the problem of disposing of by-product calcium compounds, such as calcium chloride and calcium sulfate, are described. In addition to dolomite and magnesite, magnesia is obtained from brucite, natural brines, sea water, saltworks bitterns, magnesium silicates (olivine and serpentine) and magnesium salts.

In 1929, the United States had only one domestic producer and output was only a few hundred tons. Although the production total today is a military secret, it is many thousands of tons annually and the rate is increasing.

Grinding Feldspar

(Continued from page 43)

down to a minimum. To reduce dust throughout the plant, all bucket elevators, chutes, crusher openings are enclosed in wooden or steel enclosures, and the dust laden air is drawn to the Norblo collector.

All electric motor drives on crushers and screens are equipped with Gates V-belts. These drives have stood up well in spite of the fact that they are subjected to operation under abrasive dust conditions.

Officers of the company are J. W. Magnuson, president; V. E. Magnuson, secretary-treasurer; and A. T. Magnuson, superintendent.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912, and March 3, 1933

Of ROCK PRODUCTS, published monthly at Chicago, Illinois, for November 1, 1943.

State of Illinois, County of Cook, ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared Charles Hoefer, Jr., who, having been duly sworn according to law, deposes and says that he is the Business Manager of Rock Products and that the following is, to the best of his knowledge and belief, a true statment of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

Publisher—Tradepress Publishing Corporation, 309 W. Jackson Blvd., Chicago, Ill.

Editor—Nathan C. Rockwood, 309 W. Jackson Blvd., Chicago, Ill.

Managing Editor—Ralph S. Torgerson, 309 W. Jackson Blvd., Chicago, Ill.

Business Manager—Charles Hoefer, Jr., 309 W. Jackson Blvd., Chicago, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one percent or mere of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Tradepress Publishing Corporation, 309 W. Jackson Blvd., Chicago, Ill. The stockholders of the Tradepress Publishing Corporation are John R. Thompson, 2511 Coyle Avenue, Chicago; J. L. Frazier, 2043 Orrington Ave., Evanston, Ill.; Col. J. B. Maclean, 7 Austin Terrace, Toronto, Ont., Canada; Horace T. Hunter, 120 Inglewood Drive, Toronto, Ont., Canada; The Maclean Publishing Co., Ltd., 481 University Avenue, Toronto, Ontario, Canada.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds or other securities than as to stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is: (This information is required from daily publications only.)

CHARLES HOEFER, JR.,
Business Manager.

Sworn to and subscribed before me this 20th day of September, 1943.

(Seal) M. E. JOHNSTON.
(My commission expires Oct. 20, 1945.)

Metal Congress Meeting In Chicago

THE AMERICAN INSTITUTE OF MINING ENGINEERS held a regional meeting in Chicago, October 16 and 17 in connection with the American Society for Metals and the National Metal Congress. An interesting exhibit showing advances in metallurgy and products was held in connection with the meetings at the Palmer House.

Papers of interest to many rock products producers were presented at the A.I.M.E. sessions. These papers included the "Pidgeon Process," by R. L. Sebastian, W.P.B.; "The Basic Magnesium, Inc., Operations in Nevada"; the "Hansgirg Process at Permanente," by T. A. Dungan, Permanente Magnesium Corporation.

There was also a session by wire rope manufacturers. Carl E. Johnson, president of the Wire Association, gave the opening address. Session chairmen were E. W. Gunstrom, Rome Cable Corporation; R. B. Whyte, MacWhyte Co.; Fred M. Crapo, Indiana Steel & Wire Co. Speakers included John C. Aiken, Jones & Laughlin Steel Corporation; E. J. Crum, Bethlehem Steel Co.; and Rodman R. Tatnall, Wickwire Spencer Steel Co.

Dolomite for Magnesia

A COMPREHENSIVE REVIEW of the uses of dolomite as a source of magnesia has been prepared by the United States Bureau of Mines under the title, "Information Circular 7247, Economic Considerations in the Recovery of Magnesia from Dolomite," by Alvin Schallis. Dr. Sayers, Director of the Bureau, commenting on the circular, said, "Dolomite, which is abundant in the vicinity of many industrial centers, may be treated economically to yield any desired grade of magnesia. It is likely, therefore, that dolomite soon will be one of the more important sources of this material."

Other Sources of Magnesia

While magnesite is a leading source of magnesia in the United States today, most of the known domestic commercial magnesite deposits are far from principal consuming areas and transportation costs must be added to manufacturing overhead. Reserves of magnesite are not great and at the present rate of consumption will be depleted in a few decades, the Bureau reports.

Utilization of lower-grade magnesite will necessitate employing increasingly expensive beneficiation methods. Despite this, however, magnesite undoubtedly will continue for some time to be the most economical source of magnesia in areas adjacent to its production.

The Bureau publication reviews the general economic considerations involved in utilizing dolomite, and raw materials, properties of products, plant location, and manufacturing processes are discussed from a marketing viewpoint. By-product sources of magnesia also are emphasized and the problem of disposing of by-product calcium compounds, such as calcium chloride and calcium sulfate, are described. In addition to dolomite and magnesite, magnesia is obtained from brucite, natural brines, sea water, saltworks bitterns, magnesium silicates (olivine and serpentine) and magnesium salts.

In 1929, the United States had only one domestic producer and output was only a few hundred tons. Although the production total today is a military secret, it is many thousands of tons annually and the rate is increasing.

Safety Congress Meeting

Discuss practical applications of new safety standards

A LARGER ATTENDANCE of rock and associated industries than any similar meeting for several years was recorded at the National Safety Congress held in Chicago, October 5, 6 and 7. This state of affairs was in no sense surprising for the entire Congress was the largest in point of attendance of any yet held, some 6,500 programs being passed out at the registration desk on the opening day. The total attendance reached over 10,000.

WILLIAM M. POWELL, safety director of the Medusa Portland Cement Company, Cleveland, Ohio, presided as general chairman of the Cement and Quarry section. At the opening session, the following officers were elected to serve until the thirty-third Congress, in 1944:

New Officers

General Chairman, David Adam, Safety Director, Lawrence Portland Cement Co., Northampton, Penn.; Vice-chairmen, H. F. Yotter, safety director, The General Crushed Stone Co., Easton, Penn., and F. L. Maus, safety director, Alpha Portland Cement Co., Easton, Penn.; Secretary, J. R. Boyd, Administrative Director, National Crushed Stone Association, Washington, D. C.; News Letter Editor, Jack Dempster, safety director, Canada Cement Co., Ltd., Montreal, P. Q., Canada; Chairman, Engineering Committee, Johan Norvig, general superintendent, Pennsylvania-Dixie Cement Corp., Nazareth, Penn.; chairman, Membership Committee, L. R. Rice, safety engineer, Nazareth Cement Co., Nazareth, Penn.; chairman, Publicity Committee, P. N. Bushnell, assistant director of industrial relations, Universal Atlas Cement Co., New York, N. Y.; chairman, Program Committee, S. L. Greenawalt, chief engineer, North American Cement Corp., New York, N. Y.; and chairman, Statistics Committee, W. W. Adams, supervising statistician, U. S. Bureau of Mines, Washington, D. C.

The officers, with the following members at large, comprise the Executive Committee of the Section. V. P. Ahearn, executive secretary, National Sand and Gravel Association, Washington, D. C.; H. M. Beatty,

David Adam, new chairman, Cement and Quarry Section

vice-president, The Kelley Island Lime and Transport Co., Cleveland, Ohio; F. J. Buffington, safety director, New York Trap Rock Corp., New York, N. Y.; A. J. R. Curtis, assistant to general manager, Portland Cement Association, Chicago, Ill.; R. A. Dittmar, plant manager, Universal Atlas Cement Co., Hudson, N. Y.; Otho M. Graves, president, The General Crushed Stone Co., Easton, Pa.; M. C. M. Pollard, safety director, National Gypsum Co., Buffalo, N. Y.; Col. H. A. Reninger, assistant director, Civilian Defense, U. S. Army, Baltimore, Md.; S. W. Stauffer, president, National Lime Association,

H. F. Yotter, vice-chairman

Washington, D. C.; and A. L. Worthen, president, New Haven Trap Rock Co., New Haven, Conn.

Resolutions

For a long period of years the Cement and Quarry Section as well as many of its members have received splendid help from the U. S. Bureau of Mines through its safety, statistical and scientific services. Recognition of the almost invaluable help thus accorded has been given by the Section from time to time. The special assistance recently rendered by the Bureau of Mines in connection with the new quarry standards were especially appreciated at this meeting, after which a resolution was unanimously passed requesting the granting of more adequate funds by the Congress for Bureau work.

Resolutions were also unanimously adopted expressing the loss of the Cement and Quarry Section in the deaths of Clifford Saxon, safety engineer, Bureau of Mines and E. J. McCrossin, chief mine inspector of the State of Alabama.

Statistical Summary of Accident Experience

W. W. Adams, Supervising Statistician, U. S. Bureau of Mines, presented a very complete and illuminating survey of recent accident experience in the industries principally represented in the Cement and Quarry Section.

Mr. Adams said in part:

"Recent accident experience of the industry (as above defined) is comparatively good—much better than when the records were started in 1911; better than it was in, say 1925 or 1930. Moreover, the past five years (1938-42) present a more pleasing picture than that furnished by the five years 1931-35. Annual rates have fluctuated, but the trend has been favorable, showing, as it does, progress in the prevention of accidents.

"Operating companies began to furnish accident reports to the Bureau of Mines in 1911, 32 years ago. By 1916 the reports of injuries had

Safety Congress

(Continued from page 105)

improved, so that compilations based upon them produced accident rates that appeared to be trustworthy and reasonably complete. In that year, 1916, the accident-frequency rate was 63.4. By 1931 the rate had dropped to 41.0. In 1936 it had fallen to 39.5 but it rose to 40.1 in 1941. The estimated rate for 1942 shows another drop, this time to 37.6. Only in two other years has the rate been so low, in 1939 and 1940. When we compare the rate for 1916 with that of either of the most recent two years, 1942 or 1941, we find that the quarrying industry has reduced its accident rate by 35 or 40 percent. There is a sound basis, therefore, for the statement that the recent accident experience of the industry has been good.

"The generally favorable record of the industry as a whole has not been shared equally by all kinds of quarries. Also, the characteristic accident rates of some branches of the industry may be higher or lower than for other branches.

"To consider each branch of the industry separately, it is necessary to select a period of time ending with 1941, as some companies have not yet reported for 1942. During the 11 years, 1931 to 1941, the cement industry led all other groups engaged in quarrying and related work by maintaining the best safety record, meaning thereby that the accident rates in that industry were lower than for other branches of the quarrying and allied industries during each of the 11 years. Moreover, the rates for the cement industry continue to improve. Although the rate for 1941 was higher than that in the three years immediately preceding, the average for the most recent five years was better than the average for the first five years. This favorable record covers the entire cement industry, including work inside the quarries and that performed at the cement mills.

Favorable Cement Record

"The comparison continued favorable for cement when the quarry work and the mill work are considered separately, and compared with quarry work and outside work at other classes of quarries where the stone is crushed after quarrying. First position in safety was maintained by the quarries of cement companies during 9 of the 11 years under review, while the cement mills held first position during 8 of the 11 years, and second position during the remaining three years. If we wish to let 100 percent represent a perfect score of unbroken leadership during 11 quarry years and 11 mill years—that is, 22 plant years—covering quarries and mills, the record shows that the proper score for the cement industry, which held its lead in 17 of the possible 22 years, was 77 percent. If to this achievement, we add credit for the three years when cement mills occupied second position, the score would be raised to 91 percent.

"This fine performance in safety at cement plants is particularly gratifying because of the large num-

(Continued on page 108)

Safety Congress

(Continued from page 106)

ber of men that the industry employs. When a large industry materially reduces its accident rate, the actual number of accidents prevented is also necessarily large.

"To summarize: A line-up of the seven classes of quarries based on their records during the most recent five years for which figures are available shows the relative standing to be in this order: (1) cement, (2) granite, (3) marble, (4) limestone, (5) slate, (6) sandstone, and (7) traprock. Each of these groups, with one exception, shows a favorable record when the most recent five years is compared with the first five years. The largest improvement was made by granite companies, whose accident rate was reduced about 17 percent. A 15 percent reduction was reported for cement. Traprock quarries, whose prevailing rates have been higher than for other groups, nevertheless, lowered their rate 9 percent. The reduction for sandstone quarries was six percent. A two percent reduction was reported in the rate for limestone and a one percent reduction for slate. Only one class of quarries —marble quarries—reported a higher rate, and in this instance the increase was 18 percent. All groups combined reported a rate reduction of seven percent.

"About half of all of the employes in the quarrying industry of the United States are distributed among seven states. The leading state is Pennsylvania, in which about one-sixth of all quarry workers are employed. The six other states are Ohio, Missouri, New York, California, Indiana, and Illinois. The latest five years for which figures are available, when compared with the earlier five years, 1931-35, show a seven percent reduction in accidents per million manhours in the United States as a whole. Pennsylvania's rate has declined four percent. The rate for the second largest state, Ohio, and that for California both declined 28 percent. A 19 percent reduction was revealed for New York and a 13 percent reduction for Illinois. Records for Missouri, the third largest state, showed an increase of 10 percent, while a five percent increase was shown in the rate for Indiana."

Quarrying Practice

Quarry standards and quarrying practices came in for a very large share of the information and the discussion presented at the meeting. The first paper bearing on this subject was ably presented discussion by William L. Roscoe, general mill foreman at the Catskill, N. Y., plant of the North American Cement Corporation, for many years a quarry foreman for that company. Mr. Roscoe based his discussion largely on a review of "Standards for Safety in Quarry Operations" recently completed by the Cement and Quarry Section.

Mr. Roscoe said in part:

"The committee that prepared these standards has done a fine job. It has made an excellent contribution to the fight on quarry accidents. The next contribution should be forthcoming from top management and should include selling their supervisors and winning the complete cooperation of the latter.

"These new standards are so practical, simple and thorough that their application should be routine; but management must sell its supervisors completely or some may regard compliance as too great a task and may fall back on partial enforcement covered up with alibis and half-truths.

"Section I of the new standards includes some very sound and practical rules applicable to all quarries. It has been my experience that any setup to assure application of a standard practice must be so planned that a minimum amount of work is involved.

"Rule 2, for instance, provides that after overburden has been stripped back a specified distance, it is to be sloped to its angle of repose and precautions taken to prevent wash and slides from falling into the quarry. There is no doubt that the erection of baffle boards, screens, or cribbing, as suggested in rule 3, would be an effective means of protection against this hazard. But let us look at it from another angle. Suppose at the time the job of stripping is completed, the supervisor is hard pressed for time and help. Doesn't it seem likely that the work involved in this method may start him thinking up excuses for not complying with the rule? Doesn't it seem probable, then, that if we set up a simpler method, we could expect his more willing cooperation?

"A method found entirely satisfactory for local conditions, simple in its application, and effective in its purpose is to strip back the specified distance, leave the face nearly vertical, then haul screenings and dump over the edge forming a windrow at the base, its entire length. The only labor needed in this method of precaution is a truck driver and one man

(Continued on page 110)

Safety Congress

(Continued from page 108)

to level off, in order to fill in spaces between loads. It is surprising how effectively a small windrow of screenings will check wash and slides of overburden.

"If we will look back and examine our past accident experience in connection with the so-called scaled quarry faces, we should arrive at but one conclusion, and that is, the record stands as an everlasting monument to our failure to recognize the fact that there is no such thing as a quarry face made safe. Therefore, any attempt to scale the face with the idea of working men under that face is exactly the same as partially guarding a piece of machinery which, from a safety standpoint, is worse than no guard at all.

"What can be done about it? In the first place, let us consider quarries where 3-cu. yd. shovels or larger are used. If we rid the face of projecting large rocks and overhanging ledges, we can forget about scaling to knock down the smaller loose stones. Let it be known that no scaling has been done. When the large rocks on top of the pile are to be drilled, set a deadline at twenty-five feet from the face. Permit no drilling to be done beyond this point. Then, when the shovel takes the last cut near the face, it can dig from under the remaining large rocks and let them slide down the bank and away from the face, where they can be drilled in safety.

"Some may argue the point that if a rock is let down in this way, too large for the shovel to cast out of the way, it would hamper production. But this can be avoided by having the shovel dig first into the bank at a point where the large rocks are located leaving the better part of the bank as a reserve to move the shovel to, in case this condition arises, while the necessary drilling and blasting of the rock is being done.

"Next, let us consider quarries with smaller shovels. Smaller shovels have the advantage of movability, and an occasional rock, too large to handle, and too close to the face to drill, could be dug around and left laying until the next shot has been made. Then, when this shot is cleaned up to the point where the rock or rocks, as the case may be, were left, they will be the width of the last shot farther away from the new face, which should be a safe distance for drilling.

"However, it will be found necessary to drill some rocks on top of the rock pile near the face which cannot be let down by digging from under without endangering the shovel and the operator. When faced with this condition, there is one effective precaution which may be taken, that is by the use of a tarpaulin—the length to be determined by the height of the quarry face. Let us say the height of the face is 50 ft. After firing a primary shot, say the rock pile next to the face is 25 ft. high. This leaves a distance of 25 ft. from the top of the rock pile to the brink of the face. Now suppose you had a tarpaulin 10- x 35-ft. long. You merely lay this roll of tarpaulin down 10 ft. back from the brink of the face, tie fast or lay flat stones on the one end, then roll it over the rim directly in line with the rock to be drilled. The other end would reach to the rock pile protecting the driller from falling rock. Any small stone which may work out of the quarry face would merely slide down behind the tarpaulin, being kept close to the wall where it would land harmlessly."

Mr. Roscoe's paper was followed by a great deal of valuable discussion on safe quarry practices, led by Johan Norvig, general superintendent of the Pennsylvania-Dixie Cement Corporation and chairman of the Portland Cement Association's Subcommittee on Quarry Practice. This discussion involved proper electrical connections for blasting, instructions to drivers and shovel operators working near the quarry face.

Safety and Manpower Problems

N. M. DEBRUIN, superintendent of the Lone Star Cement Corporation's plant at New Orleans, presented an interesting paper on "High Labor Turnover and Safety" which led to many questions and many valuable expressions on this timely subject.

EARL G. GLESSNER, a welder employed at the York, Penn., plant of the Medusa Portland Cement Company spoke splendidly on "Selling Safety to the New Man," reflecting particularly the viewpoint of the safety-minded employes of York plant.

A. J. R. CURTIS, of the Portland Cement Association introduced two selected sound-slide pictures on the reception of the new employe and advised inquirers interested in introducing sound-slide pictures in safety and plant educational work.

PAUL C. VANZANDT, consulting engineer for the Universal Atlas Cement Co., gave the closing paper on the program, an inspirational address to plant safety workers entitled "The First Law of Nature."

Washington Regulations

Hard Facing Materials

W.P.B. LIMITATION ORDER L-223 as amended September 25, 1943, Part 3294.151: Restrictions have been placed on delivery of hard facing material, except as follows:

(1) To fill any contract or purchase order for hard-facing material to be delivered on a preference rating of AA-5 or higher for the maintenance and repair of any of the following:

(i) Any machine or equipment used exclusively in the manufacture of any of the following: implements of war; wire and radio communication equipment; rubber; aviation gasoline; explosives; dry batteries; machine tools; cement; brick; chemicals; plastics; food processing equipment; industrial electric equipment; lumber; paper; abrasive grinding wheels; and tools to be used in mechanical fixtures for cutting, shaping, forming and blanketing of material, either hot or cold; and precision gauges.

(ii) Any machine or equipment used exclusively for any of the following: mining; excavating; dredging; quarrying; drilling, producing and refining of petroleum; harbors; highways; utility plants, including but not limited to electric light and power, gas, street railway, telephone, telegraph and cable communication, and water; railroads (including track repair); and primary metal processing (i. e., steel mills, foundries, brass mills, ferro-alloy plants, magnesium plants, and other metal plants).

(2) To fill any contract or purchase order for hard-facing material to be delivered on a preference rating of AA-5 or higher and to be physically incorporated into any of the following, or any part thereof: implements of war; valves; lathe centers; pumps; dredges; industrial electrical control equipment; equipment for production of welding electrodes; pneumatic hammers; wire and radio communication equipment; automotive replacement parts, as defined in Limitation Order L-158, as amended; chemical equipment; road machinery; Diesel engines; food processing equipment; oil well drilling equipment; tools to be used in mechanical fixtures for cutting, shaping, forming and blanking of material, either hot or cold; precision gauges; and any agricultural machinery and equipment, including but not limited to plow shares, cultivator shovels, harrow teeth and discs.

* * *

(3) [Deleted Sept. 25, 1943.]

(4) To fill any contract or purchase order for hard-facing material for research work or field tests in connection with any of the applications listed above, except that the total to be delivered for these purposes by any producer or to be received by any person shall not exceed 100 pounds of hard-facing material per month.

(5) For resale in accordance with the provisions of this paragraph (b).

(g) *Producer's forms.* Each producer shall file monthly with the War Production Board, Ref. L-223, reports on Forms WPB-1837 and 1838. These reporting provisions have been approved by the Bureau of the Budget pursuant to the Federal Reports Act of 1942.

Belt Prices

O.P.A. PART 1315: Section 1315.37 (b) is amended to read as follows:

(b) *Maximum manufacturers' prices for V-belts made in whole or in part of neoprene*—(1) *Applicability of this paragraph.* This paragraph is applicable to any V-belts made in whole or in part of neoprene for which the manufacturer had a price stated in his price list in effect on October 1, 1941.

(2) *How the manufacturer calculates his maximum price.* The manufacturer shall calculate the maximum price of the V-belts covered by this paragraph as follows: The manufacturer shall first deduct from the list price he had in effect on October 1, 1941, an amount determined by multiplying that list price by the following percentages:

Solid neoprene multiple V-belts.	8.1%
Neoprene cover multiple V-belts.	2.9%
Solid neoprene FHP V-belts (A and B sections only).....	9.4%
Neoprene cover FHP V-belts.....	3.8%
Automotive equipment solid neoprene fan belts	12.2%

The manufacturer shall then deduct from the resulting figure all discounts, allowances and other deductions from the list price that he had in effect to a purchaser of the same class on October 1, 1941.

Section 1315.37 (f) is added to read as follows:

(Continued on page 114)

Help Conserve Paper

Share Your ROCK PRODUCTS

● There are many other members of this industry who can profit from ideas contained in this copy of ROCK PRODUCTS, so, when you have finished with it, hand it to some other man who can profit from the many good suggestions it contains.

Washington Regulations

(f) *Maximum manufacturers' prices for Grade 1 neoprene conveyor belting.* This paragraph is applicable to Grade 1 conveyor belting made in whole or in part of neoprene which is made with either a 28 or a 32 ounce duck. Grade 1 means belting having a minimum range of 1700 to 2200 pounds per square inch in the tensile strength of the covers and a minimum range of 16 to 19 pounds per square inch in the friction between plies. The maximum manufacturers' price for the sale of that conveyor belting to consumers shall be the price listed in Table V-D. If the belting has a skim coat in addition to the friction coat, the maximum price for that conveyor belting may be increased by an amount equal to 10 percent of the carcass price listed in that table.

TABLE V-D

Consumers' Maximum Prices for Grade 1 Neoprene Conveyor Belting
Price per inch of width per foot
Tensile strength of the covers, minimum range—1700-2200 lbs. per sq. in.
Friction between plies, minimum range—16-19 lbs. per sq. in.

Covers	Ply	Wt. of duck	
		28 oz.	32 oz.
Carcass only.....	4	0.0764	0.0814
	5	.0956	.0994
	6	.1147	.1193
1/16" Top by 1/32" Bottom.	4	.1292	.1342
	5	.1484	.1522
	6	.1675	.1721
1/8" Top by 1/32" Bottom.	4	.1644	.1694
	5	.1836	.1874
	6	.2027	.2073
1/8" Top by 1/16" Bottom.	4	.2172	.2222
	5	.2364	.2402
	6	.2555	.2601
For each 1/32" additional cover stock..		.0176	.0176

The manufacturer shall determine his maximum price for the sale of belting covered by this paragraph to persons other than consumers by deducting from his maximum price for sales to consumers all discounts, allowances and any other deductions from the consumers' net price that he had in effect to a purchaser of the same class on October 1, 1941.

This amendment became effective October 1, 1943.

More Reinforcing Bars

W.P.B., STEEL DIVISION, has called the attention of claimant agencies to the availability of concrete reinforcing bars in considerable tonnage. Use of these bars would replace lumber in many instances and thus help relieve the shortage in forest products.

FINANCIAL NOTES

RECENT DIVIDENDS

Alpha Portland Cem. Co.	$0.25	Dec. 1
Dolese & Shepard Co.	2.00	Nov. 15
Florida Portland Cement Co. 7% pfd.	3.50	Oct. 30
Riverside Cement Co. pfd.	1.50	Nov. 1
Schumacher Wall Board Corp.	.20	Nov. 15
Schumacher Wall Board Corp. pfd.	.50	Nov. 15
Superior Portland Cement Co. B	.50	Oct. 27

PENNSYLVANIA-DIXIE CEMENT CORP., New York, N. Y., showed the following statement of earnings for the year ended September 30:

	1943	1942
Net sales	$8,920,793	$11,429,264
Cost, exp., etc.	6,908,689	8,229,578
[1]Depreciation and depletion	508,444	509,743
Operating profit	1,503,660	2,689,943
Other income, net	74,328	5,763
Total income	1,577,988	2,695,706
Interest	180,289	209,648
Inc. & prof. tax	743,000	1,099,850
Res. for conting.	.....	513,500
Net profit	654,699	872,708
[2]Times int. earn.	8.75	10.41
Earn., pfd. share	$5.40	$7.20
[3]Earn., com. share	0.48	0.06
No. of pdf. shares	121,200	121,200
No. of com. shares	400,000	400,000

[1]Additional depreciation charged to special reserve: 1943, $431,638; 1942, $442,534.
[2]Before income and profits taxes.
[3]Disregarding preferred arrears.

ALPHA PORTLAND CEMENT CO., Easton, Penn., presented the following earnings statement for the year ended September 30:

	1943	1942
Net sales	$7,646,163	$11,078,912
Oper. expenses	5,986,645	7,979,517
Depreciation and depletion	945,025	997,774
Operating profit	714,493	2,101,621
Other income	96,344	73,329
Total income	810,836	2,174,950
Income charges	31,810	90,726
[1]Fed. income tax	280,572	796,155
Wartime res.	200,000	.....
Net profit	298,455	1,288,069
Common divs.	919,085	1,268,180
Surp. for periods	d 620,630	19,889

[1]No liability incurred for excess profits taxes.

•

LEHIGH PORTLAND CEMENT CO., Allentown, Penn., has reported a net profit of $1,551,990 for the year ended September 30, 1943. This compares with $1,960,544 for a like period ended September 30, 1942.

•

FLORIDA PORTLAND CEMENT CO., Chicago, Ill., had a net profit of $436,664 for the nine months ended September 30, 1943, compared with a profit of $651,734 for a like period in 1942.

OBITUARIES

LION GARDINER, vice-president, Jaeger Machine Co., Columbus, Ohio, and long prominent in the ready-mixed concrete industry, died at his home in Columbus, November 2, of a heart attack. He was about 60

Lion Gardiner (center) with friends at a recent convention

years old, having graduated in civil engineering at the University of Illinois in 1907. He was captain of the university football team his senior year, and ever since had been an official of collegiate football, having refereed many games. His business career included the management of *Engineering Record* in the days before its consolidation with *Engineering News* and later he was an official of the Lakewood Engineering Co. He had been vice-president of the Jaeger Machine Co. for several years and was a pioneer in the development of the ready-mixed concrete industry, being prominent in the American Concrete Institute (vice-president at the time of his death) and of the National Ready Mixed Concrete Association. He was also vice-president, central district, American Road Builders Association. Lion Gardiner had a host of friends in many lines of business activity who will sorely miss this genial and helpful personality.

•

PETER MILLIRON, president of the P. Milliron Sand and Gravel Co., East Liverpool, Ohio died recently at the age of 64. Mr. Milliron was also president of the P. Milliron Transfer and Storage Co. and the P. Milliron Oil and Gas Co.

•

GEORGE R. SHENBERGER, secretary and general manager of the J. E. Baker Co., York, Penn., died recently at the age of 65. Mr. Shenberger has been associated with the Baker company for nearly 50 years.

•

EARL ZIMMERMANN, vice-president, Ohio Gravel Co., Cincinnati, Ohio, died recently at the age of 60.

FRED W. SEITZ, secretary-treasurer of the Hornell Gravel Corp., Salamanca, N. Y., passed away recently at the age of 53. Mr. Seitz was one of the founders of the Springville Sand and Gravel Co., which later was consolidated with the Hornell concern.

•

WALTER J. KENNEDY, vice-president and manager of the Welch-Sandler Sand Co., Inc., Kansas City, Mo., passed away recently at the age of 66.

•

STUART J. SAKS, president, Morris Machine Works, Baldwinsville, N. Y., died recently at the age of 52.

Manufacturers' News

Wickwire Spencer Steel Co., New York, N. Y., has announced the appointment of T. H. McSheehy as sales manager of the wire rope division, with headquarters in New York, N. Y. J. A. Old, who has been with the company a number of years, succeeds Mr. McSheehy as Pacific Coast sales manager. Mr. McSheehy first came with Wickwire Spencer in 1923. During this time he has served in a variety of executive sales capacities. At the time of his appointment he was Pacific Coast manager. Before joining Wickwire Spencer, Mr. McSheehy was with the American Steel & Wire Co.

T. H. McSheehy

E. I. DuPont de Nemours & Co., Wilmington, Del., has named Charles B. McCoy director of sales of the explosives division, succeeding Samuel G. Baker, who has been made manager of the electroplating division. Mr. McCoy was formerly director of chemical and miscellaneous sales.

Link-Belt Co., Chicago, Ill., has been awarded the Army-Navy "E" pennant for excellence in production of vital war material at its Caldwell plant in Chicago. This is the fourth Link-Belt plant to be so honored. Other plants winning the "E" award are: Link-Belt Ordnance Co., Chicago, Ill.; Ewart plant, Indianapolis, Ind.; and Pershing Road plant, Chicago, Ill.

Gardner-Denver Co., Quincy, Ill., announces the appointment of R. H. Rodolf as manager of the pump and compressor division, following the death of R. J. MacFarland.

The Baker Mfg. Co., Springfield, Ill., makers of bulldozers and other earth-moving, snow removal and road maintenance equipment, has been awarded the Army-Navy "E" pennant for excellence in the production of war equipment, and the management and employees received "E" pins.

Davenport Besler Corp., Davenport, Iowa, has been awarded the Army-Navy "E" pennant for excellence in the production of war material. Presentation ceremonies were held at the plant, 2305 Rockingham Road, on November 3, 1943.

A. Leschen & Sons Rope Co., St. Louis, Mo., has announced the appointment of R. P. Tyler as general manager of sales and C. R. Deam as assistant manager of sales.

Army-Navy "E" Award Ceremonies at Dewey & Almy Chemical Co.

Dewey & Almy Chemical Co., Cambridge, Mass., has been awarded the Army-Navy "E" pennant for excellence in the production of war equipment. Impressive ceremonies were held for presentation of the pennant to the company and individual "E" pins to the employes.

The Timken Roller Bearing Co., Canton, Ohio, has appointed S. R. Kallenbaugh district manager of the steel and tube division on the West Coast, with offices at 1526 South Olive St., Los Angeles, Calif. Mr. Kallenbaugh is a graduate of Mt. Union College, and has had post-graduate training in Metallurgy at Ohio State University. Until his recent appointment, he was metallurgical service representative in Cleveland and Detroit.

The Lincoln Electric Co., Cleveland, Ohio, has announced the appointment of H. E. Cable, welding engineer, as representative in the Pittsburgh territory, assisting W. R. Persons, district manager.

The Bristol Co., Waterbury, Conn., manufacturers of automatic control and recording instruments, has been awarded the Army-Navy "E" pennant for excellence in the production of war equipment. "E" pins were awarded to the employes.

Link-Belt Co., Chicago, Ill., has been awarded the Army-Navy "E" pennant for excellence in production of vital war material at the Pershing Road plant, making it the third Link-Belt plant to be thus honored. The other plants were the Link-Belt Ordnance Co., Chicago, Ill., and the Ewart plant, Indianapolis, Ind.

Cutler-Hammer, Inc., Milwaukee, Wis., manufacturers of motor control apparatus, has announced the appointment of P. S. Jones as general sales manager. In his new duties Mr. Jones will have direct supervision of sales for the company through its thirty selling territories throughout the country. Mr. Jones has been with Cutler-Hammer since 1915.

The Cleveland Tractor Co., Cleveland, Ohio, has been awarded the Army-Navy "E" pennant for excellence in production and outstanding production achievement, and the employes have been awarded the Army-Navy "E" pins.

Atlas Powder Co., Wilmington, Del., announces the appointment of W. C. Davis as assistant director of sales in charge of the export and contractors' sections. Mr. Davis has been with the company for 25 years. James E. Dedman has been working on export sales and technical service, and on general construction and mining work with Atlas since 1939. Both Mr. Davis and Mr. Dedman will make their headquarters at the company's main offices in Wilmington, Del.

Farris Engineering Co., Ridgefield, N. J., has announced the establishment of a new division to handle valve repairs. This division is engaged in the manufacture of valves, and is fully equipped to speedily recondition and reconstruct all types of reducing, relief, and standard or special valves and control apparatus.

De Laval Steam Turbine Co., Trenton, N. J., builders of gears and turbines for marine propulsion, centrifugal pumps, rotary oil pumps, and centrifugal compressors, has been awarded a second renewal of the right to fly the Navy "E" flag with two white stars as a symbol of excellence in production.

Templeton, Kenly & Co., Chicago, Ill., manufacturers of the Simplex jack, has named William D. Boldt of Elmhurst, Ill., southeastern division sales engineer, according to an announcement by J. B. Templeton, president of the company.

Mack Trucks, Inc., New York, N. Y., has announced the appointment of Albert C. Fetzer, vice-president of Mack Manufacturing Corp., as a member of the O.P.A. truck manufacturers advisory committee. Membership of the committee of 18 men includes representatives of the major truck, bus and trailer manufacturers. First order of business to be studied by the new committee, according to Mr. Fetzer, will be amendments to the used truck price ceilings.

McWhite Co., Kenosha, Wis., has been awarded the second Army-Navy "E" flag with one white star for continuous production satisfactory to the War and Navy Departments. In recognition of individual effort each employe was given the Army-Navy "E" pin.

The Falk Corp., Milwaukee, Wis., has appointed Charles A. Petri advertising manager. He replaces Ralph H. Deihl, who has joined the Army Air Forces. This announcement was made by W. L. Schneider, vice-president of the company.

C. O. Bartlett & Snow Co., Cleveland, Ohio, has announced the appointment of Martell & Ferree, 1505 Race St., Philadelphia, Penn., as sales representatives in the Philadelphia territory, comprising Delaware, southern New Jersey and eastern Pennsylvania.

Hercules Powder Co., Wilmington, Del., has established a Sales Research Division to investigate new markets for its chemical products and to study the needs of industries served by the company. Dr. John H. Long, who has been with the company for ten years, will be in charge of the new division, according to an announcement by P. W. Meyeringh, vice-president.

Blaw-Knox Co., Pittsburgh, Penn., announces the appointment of Frederick Baker as assistant treasurer. Mr. Baker has been located in New York City for many years, where he has served as a director and financial executive for numerous industrial enterprises.

The Claude B. Schneible Co., Chicago, Ill., designers and manufacturers of dust control equipment, has announced the removal of the engineering, sales and production offices to the plant at 2827 Twenty-fifth street, Detroit, Mich., which will now be the headquarters of the company. Branch offices are unaffected. A sales office will be maintained at 4554 N. Broadway, Chicago, Ill.

Farrell-Birmingham Co., Inc., Ansonia, Conn., and Buffalo, N. Y., announces the addition of G. V. Kuligren to the staff of its Akron, Ohio office. Mr. Kuligren was formerly associated with the Industrial Engineering Division of the General Electric Co. at Schenectady, N. Y.

Industrial Brownhoist Corp., Bay City, Mich., has announced a change of address for the Cleveland Sales Office. The new location is 1812 Terminal Tower, Cleveland 13, Ohio.

LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa, has announced the appointment of Sidney L. Myers as vice-president in charge of export and federal sales. Until his present appointment Mr. Myers was export manager. He has been with the company for 20 years, starting in 1923 as a helper in the factory machine shop. Loiell Hyler, until recently chief engineer of R. G. LeTourneau, Inc., Peoria, Ill., has been made assistant chief engineer, and will be in full charge of scraper development.

The B. F. Goodrich Co., Akron, Ohio, has named Clyde O. DeLong, manager of drug sundries sales. He was formerly manager of operations, industrial products sales division. George J. Fisher, formerly assistant operating manager, has been appointed acting operating manager of the division, succeeding Mr. DeLong. William E. Powell was named field sales manager of drug sundries and Charles J. Astrup was appointed assistant to Mr. DeLong.

Hercules Powder Co., Wilmington, Del., announces the retirement of John A. Graves as general counsel, and the appointment of E. Way Highsmith, assistant general counsel, to succeed him.

New Incorporations

Catawba Mineral Corp., Charlotte, N. C., has been organized with an authorized capital of $100,000, to take over the assets and operations of the B. & S. Mining Co. in Lincoln, Catawba, Cleveland and Wilkes counties. Incorporators are John H. Booth and Ned H. Sigmon, who are owners of the B. & S. company. R. Hoyle Smathers, Charlotte, is the attorney. Mining of mica is the principal activity of the company. Kaolin, quartz, beryl and feldspar are also being mined.

The Froemming Ready Mix Concrete Corp., Milwaukee, Wis., has been incorporated to deal in concrete in ready mixed form, with a capital of 500 shares of stock, no par value. Incorporators are Frank J. Kaiser, Claire Halverson and Chester J. Niebler. G. A. Froemming Co., by C. J. Niebler, 2927 N. Holton St., Milwaukee, is the agent.

Aruby Mica Corp., Raleigh, N. C., has filed certificate of incorporation to deal generally in mica in all forms. Authorized capital stock 500 preferred, 2,000 common $1 a share. Incorporators are David H. Jackman, Harry B. Davis, both of New York, and Banks Arendell, Raleigh, N. C.

Yancey Mica Mines, Spruce, N. C., has been incorporated with a capital of $100,000. R. F. Paschal, Siler City, N. C., is the agent.

Classified Advertisements

POSITIONS WANTED — POSITIONS VACANT Set in six-point type. Minimum $1.00 each insertion, payable in advance.

INFORMATION—Box numbers in care of our office. An advertising inch is measured vertically in one column. Three columns, 30 inches to the page.

CLASSIFIED—Displayed or undisplayed. Rate per column inch, $5.00. Unless on contract basis, advertisements must be paid for in advance of insertion.

Check These Pages of Every Issue for Equipment You Need

FOR SALE

BELT CONVEYORS

Three 14"x100' Robins trough belt conveyors.
One 16"x100' Robins trough belt conveyor.
One 30"x100' trough belt conveyor.
One 36"x100' trough belt conveyor.
Belt idlers and pulleys: 14" to 36".
600' of 6 ply 14" conveyor belt with ¼" cover.
450' of 36" 6 ply conveyor belt with ⅛" cover.
Slightly used 24" and 20" conveyor belt.
185' of 8 ply 42" conveyor belt with ⅛" cover.
Steel conveyor 47"x100' flat surface.
Jeffrey Foundry-Mold conveyor, 42"x150'.
Four Robins 14" Automatic belt trippers.

BUCKET ELEVATORS

50' vertical elevator, 16" buckets on chain.
40' vertical elevator, 18" malleable buckets.
52' new elevator, 20" malleable buckets, 9 ply belt.
40' elevator, 10" malleable buckets on chain.
55' continues elevator, 14" buckets on belt.
35' continues elevator, 30" buckets, 2 chains.
35' enclosed belt elevator, with 6" buckets.
1000' of 6 ply 20" punched elevator belt.
Gears, sprockets, elevating and driving chain.
New K2 and couplings for C102½ and C188 chain..

MISCELLANEOUS

Ten ton Davenport Standard Gauge gasoline locomotive.
Eight ton Whitcomb 36" gauge gasoline locomotive.
Mercury 1½ ton 30" gauge Edison battery locomotive.
Flat cars for 18" and 24" gauge track.
Two yard 36" gauge, V-shape end dump car.
Two electric car pullers with AC motors.
Sprague Electric car puller with 12 H.P. DC motor.
Motors, generators and speed reducers.
Two electric centrifugal 6" vertical pumps.

AIR COMPRESSORS

Chicago NSB 14"x13", 100 H.P. slip ring motor, 529'.
Schram 4 cyl. V drive to 60 H.P. AC motor, 360'.
Ing. Rand 2 cyl. with 50 H.P. Waukesha engine, 279'.
Ing. Rand 1 cyl. hopper cooled, 6"x6", 44'.

CRUSHERS, ROLLS, MILLS

Jaw Crushers—8"x14", 9"x16", 11"x20", 18"x32".
Traylor 11" "BULLDOG" gyratory crusher on wheels.
Robins double roll crusher, 24"x30".
Stevenson single roll crusher, 24"x30".
Single roll crusher, 24"x24" with knobs.
Corrugated double crushing rolls, 16"x16".
Simplex Unit Coal Pulverizer, type 33A.
American Standard double roll crusher, 36"x30".
Sturtevant No. 0 Rotary Fine crusher.
Williams No. 2 Semi-Vulcanite hammer mill.
Williams No. 2 Regular hammer mill.
Individual crushing rolls with shafts only.

VIBRATING AND REVOLVING SCREENS

2 Niagara "Juniors" 2 deck 2x10'.
Diamond Three deck 4'x8' vibrating screen.
Jigger Three deck 2'x5' vibrating screen.
Hummer vibrating screens, 3'x5' and 4'x5', 1 & 2 deck.
Tyler generators for Hummer screens.
100 New "TONCAP" screens, 3'x5' and 4'x5'.
Revolving screens—3'x8', 4'x16', 42"x18', 5'x20'.

G. A. UNVERZAGT & SONS
136 Colt Street **Irvington, N. J.**

FOR SALE!

1—Vulcan 6' x 42' Rotary Dryer, ⅛" shell.
1—Ruggles Cole 8' x 70' Rotary Kiln, BRAND NEW.
1—Ruggles Cole 7½' x 60' Rotary Dryer.
4—Chain Bucket Elevators, steel housing, 25', 30', 35', 45' centers, 8" to 13" buckets.
1—Set Crushing Rolls 18" x 10".
1—36" x 6' Ball Mill, chilled iron liners.
1—Patterson 2'6" x 3'6" Continuous Tube Mill, motor driven, porcelain lined, PRACTICALLY NEW.
5—Tyler Hummer Screens 3' x 5', 4' x 5'.
1—Jeffrey 42" x 24" Hammer Mill, 50 H.P. motor.
10—Jaw Crushers, 7"x10" to 24"x36".
1—Jeffrey Hammer Mill, 36" x 24", Type "A".
13—Hammer Mills, Williams, Jeffrey, Gruendler.
7—Rotary Dryers, 4'x20' to 6'x60'.
1—Ruggles Cole 5' x 30' Rotary Dryer.

PARTIAL LIST ONLY. SEND FOR BULLETIN.

BRILL Equipment Co.
183 VARICK STREET NEW YORK

BUCKETS

1—Blaw Knox 1 yd. 1—Williams ¾ yd.

CARS

1—Jordan Spreader Car, all steel.
6—20 yd. K. & J., all steel, air dump cars, vertical air dump cylinders, air brakes, etc.

CRANE—OVERHEAD

1—8 ton, 4 motor, 36 ft. span, cage control, 220 volt, D.C.

CRUSHING PLANT

1—Complete Stone Crushing Plant, capacity 850 tons per day. Principal items are: 1—Farrel 24x36 Jaw Crusher; 1—Traylor 3', type TY, Reduction Crusher; 1—4x12 triple deck Screen; 1—long 24" Belt Conveyor and 1—short 18" Belt Conveyor; complete with steel bins. Plant can be operated with electric motors, all of which electrical equipment is available or can be operated with two 100 H.P. Diesel Motors and one 50 KW Diesel motor generator set. Plant all set up in working position; perfect condition throughout; immediate delivery.

CONE CRUSHERS

1—Nordberg (Symons) 2 ft. Cone Crusher, coarse bowl.
1—Nordberg (Symons) 5½ ft. Cone Crusher, coarse bowl.

LOCOMOTIVES

1—American 41 ton, 4 wheel, saddle tank, standard gauge, cylinders 14x22, ASME boiler, 190 lbs. working pressure, for sale or rent.
1—80 ton, 6 wheel, Switcher with piston valve, with tender, superheater, code boiler, 200 lbs. pressure, electric lights, Walschaert valve motion, automatic lubrication; thoroughly modern, excellent condition, immediate delivery.
2—68 ton, 6 wheel, Switchers (same as above.)
1—6 ton Whitcomb, 36" gauge, gas.

LOG WASHER

1—Allis Chalmers 25 ft., heavy duty, Hutch type, Log Washer, with steel tank, ⅝" plate, with 2 logs with paddles 35" dia.

JAW CRUSHERS, GYRATORY CRUSHERS, ROLL CRUSHERS, DRYERS AND KILNS, HOISTS, CARS, CRANES, SHOVELS, ETC.

We Will Buy Any Modern Piece of Equipment Anywhere

A. J. O'NEILL
Lansdowne Theatre Bldg.
LANSDOWNE, PA.
Phila. Phone: Madison 8300

FOR SALE

70 and 90 Cu. Yd. Gravel Bins.

Thomas two drum Hoist, Class A, 50 H.P. (less motor).

Thomas two drum Hoist, Class Y 20, 30 H.P. (less motor).

Industrial Brownhoist Crane, 15 ton, crawler type, four cylinder Climax Gas Engine.

Barber Greene Loader, model 42 A, disc type. Caterpillars (2) with bulldozer attachments, 60".

Clertrack 8 ton tractor with bulldozer attachments, 40", Wisconsin Roll Crusher, 30" dia., 16" wide.

Clamshell Buckets: ¾ and 1 yard Owen's type "K"; ¾ and 1 yard Erie's, material handling; ⅜ and 1 yard Blawknox, rehandlers; 1 yard Brownhoist, rehandler; 2 yard Owen, type S; 4 yard Hayward, class G, rehandler; 1¼ yard Haisse, rehandling (several other items for construction and industrial machinery).

All the above equipment is offered subect to prior disposition and is available immediately.

YATES MACHINE WORKS
115 Main Street **Rochester, Michigan**

Vulcan Locomotive—20 ton, Gas, Std. Gauge.
2—Whitcomb Locomotives, Gas, 12 ton, 36" Gauge—Rebuilt.
20 ton Ohio Loco-Crane, 50 ft. boom.
Hayward 2 Yd. Orange-Peel Bucket.
¾ Yd. Model 400 P & H Shovel.
1 Yd. Link Belt K-30 Shovel.
1 Yd. Northwest 105 Shovel-Crane.
10 ton Buf-Spr. Roller, Gas, 3 Wh.
8 ton Buf-Spr. Roller, Gas, 3 Wh.
Eimco Tunnel Shovels, 12-B and 20.
5—Electric Hoists, 40, 50 and 60 HP.
McK-T. Pile Hammers, 3, 5, 6, 7.
LaBour self-pr. Pumps, 4".
Thor and Ing-Rand Air Pumps.
Gard-D. Compressor, 630' A. A. E. Dr.
2—Ing-Rand 110' Compressors.
22—Busters, Spades, Jackhammers, Sheeting Hammers.
1 Yd. Round Shaft Buckets.
1 Yd. and ½ Yd. Dump Buckets.
Pullshovel and Skimmer Attach. for ½ Yd. P & H.
2—Shovel Attach. for Byers Bearcat Jr.
Shovel Attachment for 41-B Bucy-Erie.

J. T. WALSH
Brisbane Building **Buffalo 3, N. Y.**

PULVERIZERS

One (1)—Sturtevant Vertical Emery Mill, new emery stones recently. Price $675.00
Four (4)—Kent Maxecon Ring Roll Mills, in good running condition, may be seen in operation. Price, each, $1675.00
One (1)—Bradley 3 Roll Pulverizer. Price $1150.00

WHITEROCK QUARRIES
Bellefonte, Penna.

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C., for sale at Attractive Prices. Large Stock. New and Rebuilt. All fully guaranteed. Send us your Inquiries.

V. M. NUSSBAUM & CO.
FORT WAYNE, IND.

FOR SALE

Gayco Air Separator 8'-0" dia. x 10'-0" deep.

McDERMOTT BROS. CO.
ALLENTOWN, PENNA.

FOR SALE

Steam Driven Air Compressors
Large Steam Pumps
Guaranteed Used Pipe
Steel Buildings
Tanks of all kinds and sizes

JOS. GREENSPON'S SON PIPE CORP.
Nat'l Stock Yards (St. Clair County) Illinois

---

4 OFFICES and PLANTS
CHICAGO 1135 S. Wabash Ave.
NEW YORK 30 Church St., Dept. ENR
PITTSBURGH P. O. Box 6933, Dept. ENR
PHILADELPHIA 1301 Race St.

EQUIPMENT CORPORATION of AMERICA

WE SERVE 4 WAYS
BUY | REBUILD
SELL | RENT

4

ROAD CONSTRUCTION PLANT

Complete with Ransome 27E Dual Paver, Finishers, Float Bridges, Road Pump, 7000' longitudinal Keyway Concrete Forms, Spray Curing Machine, etc. Just finished airport job.

SHOVELS—CRANES

Universal 7½-ton Truck Crane on 6-wheel Mack.
Link-Belt K44, 1½ yard Diesel Shovel.
Moore Speederane, 15 tons, gas, 65' bm.
P. & H. Model 600 Shovel, 1-yard cap.
Bucyrus Erie Model 1030 Electric Tunnel Shovel.
Buc. Erie 1 yard Steam Crane, excellent.
Bucyrus Erie 50B Steam Shovel, 2 yds.
Buc. Erie Steam Dragline, 6 to 8 yd. bucket.
Marion Model 460 Electric Shovel, 1½ yds.
Buc. Erie 41B Steam Crane and Shovel.
Byers ½ revolving Crane, Shovel and Backhoe.
Ind. Brownhoist 10-ton Cat. Crane, gas.

TRACTORS & MISCELLANEOUS

TD40 Diesel Tractor with bulldozer.
Allis-Chalmers L Tractor with Baker bulldozer.
Bucket Elevator, vertical, 40', 24" buckets.
I.R. PRE-2 Air Compressor, 1750 CFM, electric.
I.R. two stage, 315 CFM, Portable Compressor, New 1941.
6—I.R. Wagon Drills.
4—Gardner-Denver Wagon Drills.
6—Spencer Dust Collectors, equal to new.
2—Mack Trucks 6BX, Boulder type, 12 yds.
2—Sterling Trucks 170-C, Boulder type, 12 yds.
1—International Truck, 12 yds., Boulder type.
Butler 16-cu. ft. Asphalt Pug Mill.
2—Steel Stiff-leg Derricks, 10 tons, 100' bin.
Hardinge Conical Ball Mill, 4½' x 16".
Allis-Chalmers Cent. Pump, electric, 3500 GPM.
Worthington 8" cent. Bronze impeller, elec. port.
Dredge Pump 10" F.H. cent., nearly new.
Kennedy Van Saun Revolving Screen 4' x 18', almost new.

CONCRETE PLANT and EQUIPMENT

Heltzel 85-ton, 3 compt. Steel Bin-batcher.
Rex 28S Mixer on skids, almost new.
Bulk Cement Bin, 350 bbls. Complete.
Blaw-Knox 3 compt. 100-ton Aggregate Bin.
Heltzel 3 compt. Aggregate Bin 100 tons.
B.K. 50-ton, 2 compt. Bin with weigh batcher.
Fuller Kinyon Bulk Cement Unloader, portable.
Fuller C40 Rotary Air Compressor, electric.
Rex Pumperete Model 200 with 750' pipe.
Rex Pumperete Model 190 with pipe.
Rex Pumperete Model 180 with 500' pipe.
Ransome 27E Dual Paver with boom and bucket.

CRUSHERS—CRUSHER PLANTS

Telsmith 20-B steel frame Gyratory, V-belt drive.
Gyratory Crusher: K.V.S. 30, 37-S, 49; 32, 8A, 8B; Traylor 8"; McCully 15", 8", 6".
Allis-Chalmers Anaconda Type, 54"x24".
Jaw: 6x12, 9x16, 10x20, 14x24, 12x36, 13x30, 16x32, 56x84.
Complete Rock Crushing Sand & Gravel Plants.

BUCKETS—STONE SKIPS

Blaw-Knox ⅜ yd. Clam, digging.
Hayward ⅜ yd. Clam, digging.
⅝-yd. Williams Clamshell, digging.
2—½-yd. Haiss rehandling, Clamshell.
¾-yd. Haiss Clamshell, rehandling.
Erie ¾-yd. Clamshell, rehandling.
Owen Stone Grapple.
Hayward ¾-yd. Standard Orange Peel.

LOCOMOTIVES—CARS

American 60-ton, steam, std. ga.
American 50-ton, steam, Saddle Tank.
American 45-ton, steam, Saddle tank.
Whitcomb Type 0-4-0 15 ton, 36" gauge, Diesel.
Vulcan 8-ton, std. gauge, gas.
Vulcan 6-ton, gas, 36" gauge.
Porter 12 ton Saddle Tank, Steam 36" ga.
20—Phoenix, 5 yd. heavy duty, 36" ga. Quarry Dump Cars.
21—Koppel, 4 yd., 36" gauge Dump Cars.
6—40-ton Standard Gauge Flat Cars.

RICHARD P. WALSH CO.
30 CHURCH STREET NEW YORK

FOR SALE

McMYLER GASOLINE OPERATED CRAWLER CRANE. RATED ONE YARD CAPACITY, WITH 40 FT. BOOM. POWERED BY A CLIMAX MOD. TU ENGINE.

P. A. HENAULT
2140 Book Bldg. Detroit, Mich.

FOR SALE

No. 5 Kennedy Gearless Crusher, new mantle and lower concaves of manganese steel included. Price, $900.00 f.o.b.

Revolving screen with sections. 42"x21' $300.00 f.o.b.

STANDARD ROCK CO.
MORRISTOWN, FLA.

New—RAILS—Relaying
ALL SECTIONS

Also contractors' equipment, "V" shaped and Western cars, 24 and 36-in. gauge, portable track, gas locos, frogs and switches. Attractive prices quoted. Wire, write or telephone for quotations.

M. K. FRANK JR.
480 Lexington Ave. New York, N. Y. 810 Park Bldg. Pittsburgh, Pennsylvania

---

FOR IMMEDIATE DELIVERY OF RUBBER PRODUCTS

Conveyor Belting...Transmission Belting...Elevator Belting...Fire, Water, Air, Steam, Suction or Welding Hose, etc.

CALL, WIRE or WRITE
CARLYLE
THE RUBBER HEADQUARTERS

CARLYLE RUBBER PRODUCTS ARE NEW, GUARANTEED & LOW PRICED

CONVEYOR BELTING

ABRASIVE RESISTANT COVERS

Width	Ply	Top-Bottom	Covers	Width	Ply	Top-Bottom	Covers
48"	8	1/8"	1/16"	20"	5	1/8"	1/32"
42"	5	1/8"	1/16"	20"	4	1/8"	1/32"
36"	6	1/8"	1/16"	18"	4	1/8"	1/32"
30"	6	1/8"	1/16"	16"	4	1/8"	1/32"
30"	5	1/8"	1/16"	14"	4	1/16"	1/32"
24"	5	1/8"	1/32"	12"	4	1/16"	1/32"
24"	4	1/8"	1/32"				

Inquire For Prices - Mention Size and Lengths

TRANSMISSION BELTING

HEAVY-DUTY FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18"	6	10"	6	6"	5
16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
12"	5	6"	6	3"	4

Inquire For Prices - Mention Size and Lengths

ENDLESS "V" BELTS

"A" WIDTH All Sizes | "D" WIDTH All Sizes
"B" WIDTH All Sizes | "E" WIDTH All Sizes
"C" WIDTH All Sizes | Sold in Matched Sets

Inquire For Prices - Mention Size and Lengths

PROTECT THAT PLANT
FIRE HOSE

APPROVED SPECIFICATION HOSE EACH LENGTH WITH COUPLINGS ATTACHED

Size	Length	Per Length
2½"	50 feet	$28.00
	25 "	16.00
2"	50 "	23.00
	25 "	13.00
1½"	50 "	20.00
	25 "	11.00

Specify Thread On Couplings

SPECIAL OFFER . . . HEAVY DUTY
RUBBER HOSE

WATER HOSE

Each Length with Couplings Attached

I.D. Size	Length	per Length
¾"	25 feet	$4.25
1"	50 "	8.00
	25 "	6.25
1¼"	50 "	12.00
	25 "	7.50
	35 "	10.50
	40 "	12.00
1½"	50 "	15.00
	25 "	10.00
	35 "	14.00
	50 "	20.00

AIR HOSE

I.D. Size	Length	per Length	Couplings
½"	25 feet	$5.00	$1.50 Pair
	50 "	10.00	1.50 "
¾"	25 "	6.25	2.50 "
	50 "	12.50	2.50 "
1"	25 "	10.00	3.50 "
	50 "	20.00	3.50 "

LARGER SIZES ALSO AVAILABLE
All Prices—Net—F.O.B. New York

CARLYLE RUBBER CO., INC.
62-66 PARK PLACE NEW YORK, N. Y.

FOR SALE

K-B Hammermill pulverizer 12 x 24 Diamond Triple Deck Vibrating Screen 3'x10' Storage Bin 8' wide, 8' deep, 13'6" long. Centrifugal discharge Elevator, 15¾"x48", 70' centers, complete.

G. & W. H. CORSON, INC.
Plymouth Meeting, Pa.

FOR SALE

Giant Bradley Hercules Mill.
Goodman 36" gauge Mine Locomotive, 4 ton.
Osgood Conquerer Elec. Shovel, Mang. Dipper.
T2 Diesel Traxcavator.

W. H. FRIEND
345 Liberty Road Englewood, New Jersey

TRY A CLASSIFIED AD — IT PAYS

Even beyond the border go E. C. A. cranes, hoists, etc., to do their part in the war. Now they serve on the Alcan Highway.

1—Buchanan jaw crusher, size 10x 16".
1—Acme jaw crusher, Ser. No. 1873, size 12x20".
1—Acme jaw crusher, Ser. No. 1686, size 9x16".
1—United Iron Works, "Blake-type" jaw crusher, size 9½x24".
1—Allis-Chalmers, No. 5 gyratory crusher, Ser. No. 5331, opening 10x38".
1—Austin No. 5 gyratory crusher, Ser. No. 295, opening 12x35½".

LOCOMOTIVE CRANE

1—15-ton Bucyrus Erie locomotive crane, Serial No. 233, with 40' boom, steam powered. Equipped with air brakes. Thoroughly REBUILT. Cap. at a 12" radius and a 2 part line, 30,000 lbs. Boiler, vertical, size 54"x7'6". Shipping Wt. 87,500 pounds.

CRANES AND SHOVELS

1—1¼ yd. Link Belt Model K42 crawler crane, Serial No. 1265, with 40' boom, gasoline powered, and pull shovel attachment.
1—1¼ yd. Erie gas air Model GA2, Serial No. 9758, with 45' boom and shovel attachment.
1—1 yd. Osgood heavy duty crawler crane, Serial No. 2069, with 40' boom and shovel attachment.
1—¾ yd. Austin crawler crane, No T10054, 31' crane boom with shovel attach. gas power.
3—¾ yd. Koehring cranes, Model 301, with 45' boom, Serial Nos. 544, 772 and 840. Gasoline powered.
1—¾ yd. P & H Model 400 crawler crane, Serial No. 4136, with 40' boom. Gasoline powered.
1—½ yd. P & H shovel, Model No. 204, Serial No. 2303, gasoline powered.
1—¾ yd. Erie Model B2 crawler crane, steam powered, Serial No. 4027, with 50' boom and shovel attachment.

CRUSHERS

1—No. 4 Champion jaw crusher, size 9x15". Ser. No. 2606.
1—No. 2 Climax jaw crusher, size 9x16".

DRILL STEEL

200 Pcs. 1¼" round, from 2' to 24'; with threaded ends for bits.
200 Pcs. 1¼" round, with formed 2" bit, which can be threaded.
50 Pcs. 1⅛" hexagon from 2' to 12', threaded for bits.
40 Pcs. 1" hexagon from 2' to 8', threaded for bits.
2000 new 4-point Timken bits, for 1" rod.

DERRICKS

3—Steel Guy Derricks; 1—20-ton American-Terry 90' mast, 110' boom; 1—5-ton Terry Guy derrick, 70' mast, 60' boom; 1—5-ton Insley, 75' mast, 80' boom; Stiff leg derricks; 1—12-ton derrick 75' boom for hook work; 1—2-ton Pittsburgh 26' boom, 15' mast. Also a number of wood stiff leg derricks, 1 to 5-ton cap.

HOISTS (ELEC., GAS, STEAM)

55—Electric, ranging from 20 H.P. up to 125 H.P., consisting of triple-drum, double-drum and single-drum, with AC or DC motors, some with attached swingers. Following makes: American, Clyde, Lambert, Lidgewood and National.
Gas hoists ranging from 8 to 120 H.P., single, double and triple-drums; all standard makes. (38 in stock.)

PARTIAL LIST ONLY—SEND FOR 48-PAGE STOCK LIST

— CHICAGO —
1119 So. Washtenaw Ave.

— PHILADELPHIA —
1511 Race St.

— PITTSBURGH —
P.O. Box 933 Dept. RP

— NEW YORK —
30 Church St. Dept. RP

EQUIPMENT CORPORATION of AMERICA

ROTARY DRYERS

1—6'-0" dia. x 30'-0" Dryer
1—4'-0" dia. x 21'-0" Dryer
1—3'-6" dia. x 25'-0" Dryer
1—3'-0" dia. x 20'-0" Dryer

We manufacture dryers of any size. Send us your requirements.

McDERMOTT BROS. CO.
ALLENTOWN, PENNA.

Gyratory Crushers; Allis-Chalmers 5, 6, 7½, 8. Kennedy Nos. 5.19S, 25 and 37, Various Telsmith.
Jaw Crushers; Universal 10x20, 10x30 and 15x20. Farrel 13x24, 14x30, 18x36, 24x36. Champion 10x30, 22x50". Buchanan 12x36".
Single Roll Crushers; McL. 18x24, 21x24, Fairmont 36x60", corrugated shell.
5½-foot Symons Cone Crusher, fine bowl, excellent.
Sturtevant No. 1 Ring Roll Crusher Good Condition.
2, 3 and 4-yard Koppel & Atlas 36" ga. Dump Cars.
4 and 8-ton 24" gauge Gasoline Locomotives.
5 Miles 24" gauge Portable Track.
1-Yard Osgood Comb. Gas Shovel Crane.
50-B Bucyrus-Erie Steam Shovel, 2-yd.
30 Ton Browning Std. Ga. Steam Locomotive Crane.
100 HP. Fairbanks VA Diesel Engine.
One 125 HP. Venn Severin Diesel Engine. Rebuilt.
180 HP. Fairbanks VA Diesel Engine.
200 HP. Worthington 440-volt Diesel Gen. Set.
Compressors, Elevators, Screens, Conveyors.
What do you need? What have you for sale?

MID-CONTINENT EQUIPMENT CO.
710 Eastgate
PA-2290 St. Louis 5, Mo.

DIESEL SHOVELS

Late Models For Rent

1—SHOVEL, Lorain Model 79, 1½ cu. yd. capacity, powered by "Caterpillar" Model D13000 Diesel Engine.
1—SHOVEL, Koehring Model 604, 1½ cu. yd. capacity, powered by "Caterpillar" Model D13000 Engine.

ROY-C-WHAYNE
LOUISVILLE, KENTUCKY
800 West Main Street Wabash 1375

CRUSHERS

GYRATORY: 42" Gates K, 36" Superior McCully (Like new), 20" Superior McCully, Gates Nos. 12, 10, 9, 8, 7½, 6, 5, 4, 3, 2, 1 (75 avail.) Telsmith Nos. 4, 5, 6 SC, 9 & 16. Also many Austins, Kennedys and Traylors, many sizes.
JAW TYPE: Traylor 60x84, 48x60, 42x48, 24x72. Superior 54x66 & 24x36. Buchanan 30x42. Farrel 60x42, 30x36, 24x36, 18x36, 12x24. Good Roads 1620, Acme 24x40. Misc. 7x12, 9x16, 8x20, 8x24, 12x24, 9x35, 15x36.
REDUC. TYPE: Kennedy Nos. 25, 37 & 49. Telsmith 3-F & 40. Traylor 36" TR, 8", 10", 13". Super. McCully 6"x10". Newhouse 5, 7 & 10", Symons Cone & Disc Ty. 2' to 4'.
ROLLS: Allis-C. 12½x12, 36x10, 40x15, 54x24 & 72x30. Fairmount 36x60 & Jeffrey 24x24 to 36x54 single roll. Cornish 36x14 & 42x16, Etc., Etc.
HAMMERMILLS: Williams No. 1, 2, 3, 4, 8, & 9. Jeffrey 36x18 & 36x42. Day Nos. 20 & 40, Etc.
MILLS: Kennedy Ball 4x6, 5x6 & 5x8. Marcy 8x6 & 10x9. Hardinge 6'x3', 8'x30' & 6'x9', Misc. Tube Mills 5' & 6' x 22'. Sturtevant Ring Roll, Raymonds, Kents, Fuller Lehigh, Etc., Etc.
CRUSHING PLANTS: No. 65 Diamond No. 22 Pioneer 8x36. 1630 Good Roads, 9x40 Austin-Western, 9x36 C.R.

MISCELLANEOUS ITEMS

Barges, Bins, Buckets, Boilers, Cableways, Cars, Compressors, Conveyors, Cranes, Dryer, Derricks, **Elevators, Excavators, Generators,** Hoists, Kilns, Draglines, Drag Scrapers, Dredges, Drills, Engines, Locomotives, Loaders, Motors, Pine, Pumps, Rail, Scales, Screens, Slacklines, Shovels, Tanks, Trucks, Tractors, Etc., in many sizes, types and makes at low prices. **(I have equipment at many points in the United States and Canada. What you need may be near your plant.)**

ALEXANDER T. McLEOD
7229 Rogers Avenue CHICAGO

TANKS from Tank Cars

Large quantity
8,000-gallon — 10,000 gallon
Built for 60-lb. Hydrostatic and 25-lb. Air Tests.
Cleaned Tested Painted

Special Notice:

What would **PORTABLE** storage of your Liquids save you? Ask our proposition on **WHOLE CARS!**

Also TANKS, Commercial—Vertical and Horizontal
From 2,879 to 12,500 gals. and even much larger.

IRON & STEEL PRODUCTS, INC.
38 Years' Experience
13492 S. Brainard Ave.
CHICAGO 33, ILLINOIS
"ANYTHING Containing IRON or STEEL"

FOR SALE

1—13-B Telsmith Gyratory Crusher
1—10-B Telsmith Gyratory Crusher
1—40-A Telsmith Gyratory Crusher
1—36" Telsmith Gyrasphere Crusher
1—5' x 12' Telsmith Triple Deck Pulsator Screen
1—8" Centrifugal Pump direct connected to 40 HP Motor
1—75 HP 2 Cylinder Fairbanks-Morse Oil Engine direct connected to 62 KVA Generator

BLUE BALL MACHINE WORKS
Blue Ball, Pennsylvania

FOR SALE

1—Christie four compartment Rotary Dryer 3'-0" dia. x 30' long.

McDERMOTT BROS. CO.
ALLENTOWN, PENNA.

FOR SALE

5000—4x8x18 Steel pallets, 3 core. In good condition.

DE YORGI BROS., INC.
1392 Commerce Ave. Bronx, 61, N. Y.
Tel. Un-3-0242

CEMENT MILL EQUIPMENT

Air Compressors, Crushers, Hoists, Mills, Boiler Plant, Dryers, Kilns, Steel Balls.

Complete Stock Room Supplies, New Gears, Bearings, Belting, Safety Switches, Pumps, Shafting and Pulleys.

New Spare Parts.

• BUCKET ELEVATORS

Thousands of feet of bucket elevators, all sizes of buckets, mostly all steel encased

CONDUIT

Thousands of feet of conduit ¾" to 3"

BUCKETS

Using 844 chain, 103 chain, 132 chain and SS40 chain.

New Buckets and Gears.

• CONVEYORS

STEEL SCREW
6" - 7½" - 8" - 10" - 12" - 14" - 16" - 18" and 20" widths in Steel Box—Over 10,000 ft., all lengths.

RUBBER BELT CONVEYORS
4"-16"-18"-20"-24 and 28" widths. Centers varying from 30' to 203'.

STEEL BINS

Steel Plate Storage Bins That Can Be Reassembled—Order at Once.

58 Bins In Various Capacities and Sizes

Cu. Ft.	Dimensions
35,184	19'4"x70'x27'5" high
19,592	11'3"x40'6"x43' high
10,440	12'x58'x15' high
9,270	12'x51'6"x15' high
7,460	10'x55'3"x13'6" high
6,827	12'6"x44'x12'3" high

Also Various Bins as follows:

4—	1,650 cu. ft. and under
4—	1,116 cu. ft. and under
5—	896 cu. ft. and under
6—	640 cu. ft. and under
7—	532 cu. ft. and under
12—	370 cu. ft. and under
11—	288 cu. ft. and under
2—	95 cu. ft. and under
1—	37 cu. ft.

HEAT and POWER Company, Inc.

45 BOND STREET — Phone: ALgonquin 4-3874 — (12) NEW YORK, N. Y.

Address all inquiries to Plant Office, P. O. Box 188, Easton, Pa.

---

25 & 30 ton Gas Locomotives, std. gauge.
40-45 ton Saddle Tank Locos., std. gauge.
42 Ton Geared Loco., std. gauge, ASME.
27½ ton Loco. Crane, 50' boom, 60" boiler 125 lbs. Hartford, inc. 7½ generator.
Diesel Dragline, mounted on trucks, now equipped with 110' boom & 3 yd. bucket.
Steam Draglnie, 4 cats., 70' boom, 2½ yd.
Gas Cat. Crane, 50' boom, 1¼ yd.
Northwest 1 yd. Crane-Dragline, 45' boom.
Gas Shovel, ½ yd.; Truckcrane, ½ yd.
Skimmer Scoop attachment, 1 yd., for NW.
Shovel Front or parts for P & H ¾ yd. 206.
Misc. Shovel & Hoe attachments, etc.
45' boom—For Browning Loco. Crane.
Drag Scrapers—3-2-1½-1-¾ yd., elec. & gas.
Slacklines—2-1½-1 yd., electric & gas.
8 x 24 Port. Jaw Crusher, Screen, etc.
¾ Yd. Owen type J Clamshell Bucket, Reblt.
1½ yd. Blaw-Knox Clam. bucket, rehandler.

James Wood, 53 W. Jackson Blvd., Chicago 4

FOR SALE

One 4-yard and one 5-yard Hendrix Dragline Buckets, light weights, both in good condition.

ARKANSAS COAL COMPANY
P. O. Box 844 — Fort Smith, Arkansas

FOR SALE OR TRADE

600 P & H 65' Boom Crane and Dragline.
1 Yd. P & H 450 Shovel or Crane, 50' boom.
1500 ft. 100/150 lb. M. D. Air Compressor.
2-80/100 HP International Diesel Power Units.
35 HP 2 Drum & Swinger Clyde Gas Hoist.
¾, 1 and 1¼ Yd. Shovel Attachments.
200 KVA Uniflow Engine Generator Set.

Mississippi Valley Equipment Co.
515 LOCUST ST. — ST. LOUIS 1, MO.

LOCOMOTIVES SHOVELS — CRANES CARS

1—82 ton Porter 0-6-0 separate tender switcher, 22" x 26" cylinders, National Board and A.S.M.E. boiler, I. C. C. papers.

1—71 ton Baldwin 0-6-0 saddle tank switcher, A.S.M.E., Pennsylvania and Ohio code, built 1930, overhauled with entire new firebox.

1—40 ton American 4-wheel, saddle tank, standard gauge, A.S.M.E. boiler, completely rebuilt.

1—33 ton Vulcan 4-wheel saddle tank, standard gauge, A.S.M.E. boiler, new firebox in 1942, first class condition.

1—40 ft. steel underframe flat car, 50 ton.
1—60 ft. steel underframe flat car, 40 ton.

1—2 yard Hayward rehandling 2 line clamshell bucket, completely overhauled.

Birmingham Rail & Locomotive Co.
BIRMINGHAM 1, ALABAMA

FOR SALE

1—Orton Crane—Gas—¾ yard.
1—Bucyrus-Erie Crane—Diesel—1½ yard.
1—No. 5 Gyratory Crusher.
1—16x20 Jaw Crusher.
1—Orange Peel Bucket—15 cu. ft.
1—Steel Spud—60 ft.
1—Beach Drag Scraper with Mundy Hoist and Boiler.

Western Indiana Gravel Company
Lafayette, Indiana

1—CRANE, P & H, Model 206, equipped with 40' boom, powered by Waukesha gasoline engine. Price.....**$2,375.00**

1—SHOVEL, CRANE AND PULL SHOVEL COMBINATION, Insley Type R, Serial No. R-239, equipped with Buda gasoline engine, ½ yard capacity shovel front, ½ yard capacity pull shovel attachment, crane boom..**PRICE UPON APPLICATION**

1—CRANE, SHOVEL COMBINATION, 1½ yard Heavy Duty, Model 701 Koehring, Serial No. C-2007, equipped with "Caterpillar" D13000 Diesel engine and standard boom with extensions up to 120' approximate. Also equipped with nearly new shovel front attachment, and special third drum for pile driving, etc. .....**PRICE UPON APPLICATION**

1—TRACTOR, Allis-Chalmers, Model L, equipped with front push bumper and electric starter. Price.....**$3,031.50**

1—TRACTOR ANGLEDOZER AND SCRAPER, "Caterpillar" 50 Diesel, Serial No. 1E1454, equipped with LaPlant Choate Hydraulic angledozer and LeTourneau 6 yard scraper and LeTourneau Power Control Unit. Price.....**$5,647.00**

1—TRACTOR AND BULLDOZER, "Caterpillar" D4, wide gauge, equipped with LaPlant Choate Hydraulic Bulldozer.....**FOR RENT ONLY**

1—TRACTOR AND WINCH, "Caterpillar" RD7 Tractor, equipped with Tulsa Model 70 Winch.....**FOR RENT ONLY**
Will rent with or without Winch.

1—TRACTOR ANGLEDOZER AND SCRAPER, "Caterpillar" D8, equipped with LeTourneau Angledozer, Power Control Unit, and LeTourneau Scraper.....**FOR RENT ONLY**

1—TRACTOR, International Model TD-40 Diesel **$1,500.00**

1—PAVER, 27E Koehring, complete with bucket, boom, and water tanks. Price.....**$1,500.00**

1—DUMPTORS, Koehring Model WD-60, 6 cu. yd. Diesel powered, pneumatic tired.....**FOR RENT ONLY**

1—PAVING OUTFIT COMPLETE, CONSISTING OF: Model 34E Koehring dual drum Paver, Blaw Knox Gas Electric Finishing Machine, Koehring Longitudinal Finisher, Model 1035 Bucyrus-Erie Crane, equipped with 1½ yd. Blaw Knox Clamshell Bucket, and Blaw Knox Bin, and Batcher .....**FOR RENT ONLY**

1—COMPRESSOR, portable Schramm 315', late model powered by International Diesel Engine on four wheels.....**FOR RENT ONLY**

1—COMPRESSOR, stationary, Sullivan, angle compound, Model WJ—3,348 cu. ft. actual air, equipped for flat belt drive. Price.....**$1,350.00**

1—WAGON DRILL, Ingersoll-Rand, Model MDL, equipped with Model X71 Drifter, new in 1942. Price.....**$1,180.00**

1—ROLLER, Austin, 10-ton, three-wheel. Price.....**$2,395.00**

1—SHEEPFOOT ROLLERS, DOUBLE DRUM, 88 tamping feet per drum .....**FOR RENT ONLY**

1—PULVERIZER, Gruendler Model 2XA, used less than three months. Price.....**$850.00**

1—POWER UNIT, "Caterpillar" Model D13000, 6-cyl. radiator-cooled, equipped with gasoline starting engine, hood and dash, fuel tank, open type clutch with outboard bearings and extended shaft, all on steel channel base.....**FOR RENT ONLY**

1—POWER UNIT, "Caterpillar" Model D8800, 4-cyl. radiator-cooled, equipped with gasoline starting engine, fuel tank, hood and dash. Open type clutch with outboard bearings and extended shaft, all on steel channel base.....**FOR RENT ONLY**

1—COMPRESSOR, Schramm Model 160, powered by gasoline engine, 160' capacity, on 4 steel wheels.....**FOR RENT ONLY OR RENTAL WITH OPTION TO PURCHASE**

1—COMPRESSOR, Ingersoll-Rand, 315 cu. ft., powered by 6-cylinder International Diesel Power Unit, equipped with electric starter, mounted on 4 pneumatic tired wheels.....**FOR RENT ONLY**

1—NEW SALAMANDERS, Danco. Each **$12.50**

1—DRILL STEEL, all sizes and lengths threaded for Timken Bits. Just received carload.

1—AIR HOSE, ¾" and 1", with or without couplings.

ROY-C-WHAYNE
SUPPLY COMPANY
LOUISVILLE, KENTUCKY
800 West Main Street — Wabash 1375

Try a Classified Ad

SAND AND GRAVEL WASHING & SCREENING PLANT FOR SALE

Complete with 4 double deck vibrator screens, two 200 foot 30 inch belt conveyors with steel frames, sand drag, 2000 gallon per minute Gardner-Denver water pump, motors, small conveyors, etc. All equipment new. Capacity 250 tons per hour.

MISSISSIPPI RIVER SAND & MATERIAL CO. (FOOT OF VICTOR ST.), ST. LOUIS 4, MO.

HYDRATORS
3 Kritzer & Schultless Hydrators.
AIR COMPRESSORS
BELTED: 355, 523, 676, 1000, 1300 & 1570 Ft.
ELECTRIC: 473, 676, 807, 1362, 1723 & 2300 Ft.
DIESEL: 603, 807 & 1000 Ft.
PORTABLE GAS: 110, 160, 220,310,540 & 1300 Ft.
STEAM: 49, 310, 525, 1300, 2200 & 3600 Ft.
CLAMSHELL BUCKETS, SKIPS & GRAPPLES
Owen R. A. & H Stone Grapples.
2 Yd. OWEN Type S Material Handling.
1½ Yd., 1 Yd. & ¾ Yd. HAYWARD Class E.
18 Steel Skips 6½ x 6 x 2½.
5 Ton Bucyrus Rock Grabs.
CRANES AND DRAGLINES
⅜ Yd. 5 Ton O & S 30 Ft. Boom.
12 Ton NORTHWEST 50 Ft. Boom Gas.
20 Ton LIMA, 750 Diesel, 65 Ft. Boom.
25 Ton BROWNING & 30 Ton AMERICAN Loco.
25 Ton LINK BELT K-42 Electric, 70 Ft. Boom.
CATERPILLAR SHOVELS
¾ Ld. Lima Diesel.
2 Yd. Marion Steam Shovel.
⅝ Yd., 1⅛ Yd., 2 Yd. & 4 Yd. MARION Electrics.
1 Yd. NORTHWEST Gas.
1½ Yd. LIMA Diesel.
1⅛ Yd. BUCYRUS 41B Steamer.
4 Yd. Bucyrus 120 B Electric. Also 3 yd. Erie Elec.
DUMP CARS
46—KOPPEL 1½ Yd. 24 & 30 In. Ga., V Shaped.
15—2 Yd. 3 Yd., 4 Yd., 6 Yd., 12 Yd., 36 In. Ga.
20—Std. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.
15—Std. Ga. 50 Ton Battleship Gondolas.
FLAT CARS
9—50 ton std. ga. heavy duty flat cars.
HOISTING ENGINES
Gas: 15, 30, 60, 100 & 120 HP.
Electric: 30, 52, 80, 100 & 150 HP.
Steam: 6¼x8, 7x10, 8¼x10, 10x12, 12x14.
DIESEL UNITS
75, 90, 180, 200 HP. F. M. Engines.
110 HP Ingersol Rand Engine.
175 KVA Worthington 3/60/2300.
275 KVA Fairbanks 3/60/2300.
BALL, ROD AND TUBE MILLS
6x8 Pebble Mill & 5x5 Batch Mill.
5'x22" HARDINGE CON. Dry Ball Mill.
6'x22" HARDINGE CONICAL Pebble Mill.
8'x22" HARDINGE CONICAL Ball or Pebble Mill.
4x8, 8x6 & 10x9 Straight Ball Mills.
4x16, 5x18 & 5x22 Tube Mills & 6'x22'.
3½x8 & 5x7 Air Swept Tube Mills.
2x4½, 6x12 & 5x12 ROD MILLS.
PULVERIZERS
JEFFERY, 24x20 & No. 1 Sturtevant Ring Roll.
RAYMOND Auto Pulverizer No. 0000, 0 & 3.
RAYMOND Imp. Mills, No. 32 & 55.
GRUENDLER XXB Mill & Jay Bee No. 3 & 4.
RAYMOND 4 & 5 ROLL MILLS & 5 ft. Chaser M.
STEEL STORAGE TANKS
10,000 Gal., 15,000 Gal. & 20,000 Gal. Cap.
MATERIAL BIN
116 Ton Blaw Knox 2 Compt.
400 BARREL CEMENT BIN
400 Barrel Butler Portable Steel Cement Bin with Fuller automatic batcher, push button control.
SEPARATORS AND COLLECTORS
8, 10 and 14 ft. Separators, Gayco & Bradley.
ROLL CRUSHERS
36x60 Fairmount & 36x20 Diamond.
JAW CRUSHERS
10x8, 13x7½, 14x7, 15x9, 15x10, 16x9, 16x12, 16x10, 18x11, 20x5, 20x6, 20x10, 20x12, 26x12, 30x15, 30x13, 36x15, 36x30, 36x18, 36x16, 36x9, 36x6, 36x10, 36x24, 42x9, 48x24, 48x36, 60x42, 84x66, 36x16, 9x36.
CONE & GYRATORY CRUSHERS
42 in. McCully Mammoth Gyratory.
5 No. 19, 25, 37 & 49 Kennedy.
18 in., 24 in., 30 in., 36 in. & 48 in. Symons Disc.
4—10 TZ Traylor & 4 Ft. Gyratory.
4—Nos. 5, 3 & 6 Austin Gyratory.
2—Traylor T-12 Bulldog Gyratory, also 16 inch S in. Traylor T. Gyratory.
17 Gates K—Nos. 3, 4, 5, 6, 7½, 8 & 9½.
10 Inch Austin Model 105.
6, 10 & 13 Inch Superior McCullys.
SYNCHRONOUS MOTOR GENERATORS
100 K.W. RIDGWAY 3/60/2200-250-275 volt.
150 K.W. GEN. ELEC. 3/60/2200-250-275 v.
200 K.W. RIDGWAY 3/60/2200-250-275v.,900 rpm.
SLIP RING MOTORS
52 HP. GEN. ELEC. 3/60/440 v., 1200 rpm.
(3) 100 HP. GEN. ELEC. 3/60/440v.,900-1200rpm.
CONVEYOR PARTS
BELT: 1000 Ft.60 In., 700 Ft.40 In., 600 Ft.36 In., 800 Ft.30 In., 1642 Ft.24 in., 517 Ft.20 In., 297 Ft.18 In., 500 Ft.16 In., 300 Ft.14 In.
IDLERS: 54 In., 42 In., 36 In., 30 In., 24 In., 20 In., 18 In., 16 In. & 14 In.
Head & Tail—Pulleys—Takeup for all sizes.
Steel Frames: 2,000 Ft. 24 In.,30 In.&36 In.Sections.
ROTARY DRYERS AND KILNS
36 In.x20 Ft., 3 Ft.x30 Ft., 4 Ft.x30 Ft., 54 In. x30 Ft., 42 In.x24 Ft., 8 Ft.x30 Ft., 5 Ft.x16 Ft., 5 Ft.x60 Ft., 6 Ft.x60 Ft., 6 Ft.x20 Ft., 6 Ft.x70 Ft., 10x30, 7½x100&8x110 Ft. Kilns.
STEEL DERRICKS
GUY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom,25 Ton 100 Ft.Boom,75 Ton 135 Ft.Boom.
LOCOMOTIVES
GASOLINE: 3 Ton,5 Ton, 8 Ton, 12,14, and 30 Ton.
STEAM: 9 Ton, 20 Ton, 40 Ton, 60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 40 Ton.
DIESEL: 4, 8 & 15 Ton.
SCREENS
VIBRATING: 2x4, 3x6, 12x8, 3x8, 3x5, 4x5, 4x8, 4x10, 48x72 & 4x12, 1, 2 & 3 Deck.
HUMMER, ROTEX, NIAGARA & ROBINS.
REVOLVING: 3x12, 3x16, 3½x18, 3x24, 4x16, 4x30, 4x33, 4x24, 5x30, 5x20, 6x20.

R. C. STANHOPE, INC.
COMPLETE PLANTS BOUGHT AND SOLD
60 East 42nd Street
New York, N. Y.

For Sale
AT ATTRACTIVE PRICES

- 2 Hardinge Mills; 10'x4', MD.
- 4 Feinc, all iron, 6'x3' Vac. Filters, Vacuum Pumps.
- 2 Ingersoll Duplex 17"x10" capacity, 1048 C.F.M.
- 3 Autoclaves 6' x 21', 1¼" plate, 300 P.S.I. working pressure.
- 1 Patterson continuous type Mixer, 3 ton per hour.
- 3 Barber, heavy duty, Jktd. Asphalt Mixers; 2000 lbs. capacity.

FIRST MACHINERY CORP.
EAST 9th STREET & EAST RIVER DRIVE, NEW YORK

FOR SALE

The following parts for 4-ft. Standard Symons Cone Crushers:

Two (2) Used Bowl Assemblies for Coarse Crushing, consisting of 2 coarse Bowls No. 42176, 2 Coarse Bowl Liners No. 42208, each with 6. Bowl Liner Bolts, Springs and Washers. These units completely assembled with Coarse Bowl Liners zinced in. Both in first class operating condition.

One (1) New Bowl Liner for Coarse Crushing No. 42208. Never been used.

Address inquiries to:
C. C. SPENCER, Purchase Manager
COMMONWEALTH QUARRY COMPANY
10 Park Place **Morristown, N. J.**

FOR SALE

1—Erie Type B-2 Steam Shovel ¾ yd. Bucket

1—Hayward 1-yd. Orange Peel Heavy Duty Bucket

1—Stationary Conveyor—18" wide, 300 ft. long

425 ft., No. 8, 3-Condr. Strip Armored Parkway Cable, 3/64 Lead — Steel Taped, 1500 volts.

CHAZY LIME & STONE CO., INC.
Chazy, New York

Milwaukee (Westinghouse-Baldwin) gasoline locomotives (3), 7-ton, 30" ga., 100% rebuilt.
Davenport, Porter & Vulcan steam locomotives (4), 17-20 ton, 36" ga., cyls. 10"x16"; rebuilt.
Trailers, carryall, 65 and 25 ton.
Browning 25-ton locomotive crane, steam.
Bucyrus-Erie gas-air shovel, GA-2, 1¼-yd.
Superior-McCully 16" gyratory crusher; also 21" std. McCully, and 12" Gates.
Newhouse 7" reduction crushers, a.c. (2).
Pioneer 300W portable gravel washing plant.
50B Bucyrus steam shovel front att., 2-yd.
Plymouth 25-ton gas locomotive, std. ga.
Worthington 5'x40' rotary dryer, direct.
Hydroelectric plant, 1000 H.P., 69' head, A.C.
Steel kiln tanks (3), 16' dia., ⅜", 32' high.
Merriman asphalt plant, r.r. type, 30 tons hr.
Euclid 6-yd. bottom dump crawler wagons (8).
Blaw Knox and Johnson batch bins.
Sturtevant rotary fine crusher, No. 2.
2—Hook fall blocks, 12 and 20 tons, single.
Boiler tubes, 236—1¾"x5', ferrules (new).

H. Y. SMITH CO.
828 N. Broadway **Milwaukee 2, Wis.**

1¼-yd. Osgood Shovel.
½-yd. Byers Shovel and Crane, ¾ swing.
¾-yd. Austin Shovel, ¾ swing, tractor type.
2—18x36 Farrel Jaw Crushers, type 14-B.
2—13x30 Farrel Jaw Crushers.
1—18x36 Acme Jaw Crusher.
18A Telsmith Gyratory.
37 Kennedy Reduction, type S.
5x10 double, 5x10 single Niagara vibrator screens.
4x8 double, 3x8 double Telsmith vibrator screens.
5'x30' — 5'x24' — 5'x20' — 4'x18' — 42"x16' — 3'x18' revolving screens.
1 single and 1 double Lewis Foundry Machine Co., screw washers.
Allis-Chalmers 6" centrifugal pump type S-15,000 G.P.M.
80'x18" Belt Conveyor complete with frame and belt.
1—18" Bucket belt Elevator 70' center.
17—30" Bucket belt Elevator 66' center.
1—24" Bucket chain Elevator 80' center.
1—16" Bucket chain Elevator 40' center.
1—12" Bucket chain Elevator 36' center.
75 hp., 850 R.P.M.; 40 hp. 1200 R.P.M., slipring.
40 hp., 690 R.P.M. slipring; 25 hp., 850 R.P.M. slipring.
25 hp., 870 R.P.M. Electric motors.
2—G.M.C. Dump trucks model A.C. 402, 3-yd. steel bodies, rebuilt 1939.

Frank A. Kremser & Sons, Inc.
R. D. No. 2, Reading, Pa.
Ph. Leesport 100 **Night Ph. Reading 42521**

FOR SALE

1—Frank Adams 5 Panel Switchboard complete.
Panel No. 1—76" x 24" Steel with 2—400 Amp. oil circuit breakers with overload relays.
Panel No. 2—1—76" x 24" Steel panel with 1200 Amp. oil circuit breakers with overload and under voltage relays, ammeter and voltmeter.
Panel No. 3—76" x 24" Steel panel with 2—400 Amp oil circuit breakers having overload relays.
Panel No. 4—3—30 Amp., 250 volt, 3 pole, FA Switchfux units.
2— 60 Amp. ditto.
3—100 Amp., ditto,
4—200 Amp., ditto.
Panel No. 5—1—30 Amp., 250 volt, 3 pole, FA Switchfux units.
5— 60 Amp., ditto.
1—100 Amp., ditto.
4—200 Amp., ditto.
Cardholder for each switch.
Copper busbar connections in rear of board from 1200 Amp breaker to Panels Nos. 2, 4 and 5.

BIG ROCK STONE & MATERIAL CO.
Big Rock Ready Mixed Concrete
LITTLE ROCK, ARK.

RAILS AND ACCESSORIES
RELAYING RAILS—Super-quality machine-reconditioned—not ordinary Relayers.
NEW RAILS, Angle and Splice Bars, Bolts, Nuts, Frogs, Switches, Tie Plates, all other Accessories.
Although our tonnages are not as large as heretofore, most sizes usually available. Every effort made to take care of emergency requirements.
PHONE, WRITE OR WIRE
L. B. FOSTER COMPANY, Inc.
PITTSBURGH NEW YORK CHICAGO

FOR SALE

Fifty Brooks 2 yd. Loadlugger, steel pans; virtually new condition. Will deliver freight paid for considerably less than half price.

SAM SMITH, MACHINERY
P. O. Box 289 **Marianna, Florida**

Approx. 6,000 12x16 steel cored pallets.
Approx. 2,000 NEW 18½"x26" plain steel pallets for Besser machine.

Concrete & Cinder Blocks Products Co.
10 Buell Road **Rochester, New York**

FOR SALE

LARGE STOCK USED STEEL PLATES, STRUCTURAL SHAPES, and reconditioned steel pipe. No priority required. Immediate delivery. Inquiries invited.

MARYLAND PIPE & METALS COMPANY
304 W. Church St. **Hagerstown, Md.**

FOR SALE

PLANT EQUIPMENT
Rebuilt & Guaranteed

TYLER HUM-MER SCREEN

Type 31—8', 2 Electric Vibrators, 2 3' x 5' Screens, Single Deck Motor Generator Set

McLANAHAN STONE CRUSHER

24" x 48" Sledge Wedge

BUCKET ELEVATORS

8 x 5 Continuous Chain Enclosed
12 x 7 Chain Enclosed
Many Others

BELT CONVEYORS

14"—16"—18"—20"—24"—30"
All Types—Complete with Drives

THE WILLIAM W NEWELL COMPANY
P. O. BOX 477, NASHVILLE 2, TENN.

LOCOMOTIVES FOR SALE

3—75 ton 0-6-0 switchers, tractive effort 35,300 lbs., 44" centers, coal burners.
2—65 ton 0-6-0 switchers, 44" centers, oil burners, two years leeway on flues and lagging. Ready for service.
1—120 ton 0-8-0 switcher, built 1923, tractive power 49,500 lbs., 50" centers. Rigid wheelbase 16'0".

We can fill your requirements for locomotives —cars—rails.

Write—Wire—'Phone
Locomotive Export Division
EXPORTING & IMPORTING CO.
P. O. Box 2576
DALLAS, TEXAS

EQUIPMENT WANTED

WANTED: 42" or 48" x 10' or 12' Symons Double Deck Vib. Screen. One log washer with double logs paddle type 14' or 16' long. Please state price, condition, size, make, and where same can be inspected.

BATTLE CREEK GRAVEL CO.
Battle Creek, Michigan

WANTED TO BUY

Well Drill for Blast Holes 6" to 8" Diameter.
1600 Lb. String of Tools.
Wire Line.

Superior Stone Company
Raleigh, N. C.

WANTED

½, ¾ or 1 yd. Shovel or Crane.
Also Front End Loader.
100 to 150 H.P. Gasoline Engines.

MERTES MACHINERY COMPANY
MILWAUKEE 4, WISCONSIN

BUSINESS OPPORTUNITIES

FOR SALE OR LEASE

Sand and Gravel Business located near a large Government Project. This is a money making proposition. Only experienced or responsible operators need apply.

Hen Valley Sand & Gravel Co.,
Harriman, Tennessee

FOR SALE

Crushed stone and limedust business and all of our equipment. Ready to go. 54' face of stone. Fine location. Write for details. No dealers need reply.

GREENSBURG STONE COMPANY
P. O. Box 223 Greensburg, Indiana

FOR SALE
LIME PLANT—SOUTHERN INDIANA

Five (5) vertical Kilns with eulpment; good condition. Fifty-five acres land unlimited deposit High Calcium Oolitic Stone; also stone suitable for manufacture of Rock Wool. Write Box B-29, Rock Products, 309 W. Jackson Blvd., Chicago, Ill.

CEMENT COLORS

MINERAL COLORS
for
CEMENT-PLASTER-STUCCO CONCRETE PRODUCTS
"FINE BECAUSE OF THEIR FINENESS"
Ask us for samples and recommendations
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

CONSULTING ENGINEERS

CORE DRILLING
ANYWHERE
We look into the earth
PENNSYLVANIA DRILLING COMPANY
Pittsburgh, Pa.

W. R. BENDY
Cement Engineer
CLAVERACK, N. Y.

Business suspended for the duration.

H. D. RUHM
Consulting Engineer
PHOSPHATE
305 W. Seventh St.
Columbia Tenn.

RALPH GIBBS
CONSULTING CHEMICAL ENGINEER
ROTARY KILN PLANTS
DESIGN — OPERATION
YORK PENNA

POSITIONS VACANT

ENGINEER

Long established successful manufacturer of products essential to the war effort desires the services of a graduate engineer now and for future industry sales work. Sales experience desirable but not an essential requirement if applicant has substantial background and experience in design and application of conveying and power transmission machinery.

Address Box B-28, Rock Products,
309 W. Jackson Blvd., Chicago 6, Ill.

Mexican Cement Manufacturing Company is looking for a very high-class general Executive, either temporarily or permanently, to use as a re-organization expert in revamping sales and manufacturing departments and its overhead organization.

Some preference would be shown to anyone who spoke Spanish but Spanish is not an absolute requirement. It is important the man have had responsible charge of some entire Cement Manufacturing business in all departments. Any and all replies will be considered strictly confidential. Please indicate past wages and experience, title, and duties, names of past employers if possible, as well as salary desired for going to Mexico. Box B-25, Rock Products, 309 W. Jackson Blvd., Chicago, Ill.

WANTED
SAND AND GRAVEL SUPT.

Give qualifications including age, education, experience. Address Box B-23, c/o Rock Products, 309 West Jackson Boulevard, Chicago, Illinois

---

WANTED: ENGINEERING DRAFTSMAN experienced in cement plant design and layout. Location eastern Pennsylvania Application should outline technical education, previous experience, age, draft standing and salary expected. Write Box B-31, Rock Products, 309 W. Jackson Blvd., Chicago, Ill.

WANTED: SUPERINTENDENT FOR CEment plant located in the southeastern section of the United States. Engineer graduate with several years' experience as cement plant superintendent, or as assistant superintendent, preferred. In applying, outline education, positions held, age, marital and draft status and salary expectations. Write Box B-30, Rock Products, 309 W. Jackson Blvd., Chicago, Ill.

WANTED—Experienced cement plant superintendent. Location Middle West. Must have ability to handle men under present day labor conditions. Address Box B-32, care of Rock Products, 309 W. Jackson Blvd., Chicago, Illinois.

POSITIONS WANTED

Desires position as Superintendent or Chief Chemist in the cement industry. Write Box B-33, Rock Products, 309 W. Jackson, Blvd., Chicago, Illinois.

Index to Advertisers

You scuttled a Nazi Ship of *Hate*

MEN of Denmark, they never knew you . . . the iron in Danish hearts. Your native spirit flourished under Nazi-imposed "self-rule." Then you struck . . . a vital blow for the rebirth of a free Europe.

You felt the lash of the furious, baffled tyrant . . . but you hastened the day of Allied victory.

Your reward will come. As fast as your Allies can reinforce your blazing courage with planes and tanks and munitions and men . . . with great, victorious armaments that have their birth deep in pit, mine and quarry, where rugged men, using Ensign-Bickford Safety Fuse and Primacord-Bickford Detonating Fuse, make explosives produce amazing quantities of war-destined materials.

Yes, mining and mining men will speed *your day*—for *Victory Begins Underground!*

K-P

THE ENSIGN-BICKFORD CO.
SIMSBURY, CONNECTICUT

Primacord-Bickford
Detonating Fuse

Keep asking for

AMERICAN CABLE TRU·LAY PREFORMED WIRE ROPE

Because . . . it spools better!

• No doubt you have many times seen a wire rope winding itself on a drum in a slipshod, crisscross manner. TRU-LAY PREFORMED strongly resists that tendency, even under light loads at high speed. Spooling on a drum evenly, smoothly, properly, means less nicking, scarfing and crushing. *That* means longer life and better service from your TRU-LAY PREFORMED.

This is just *one* of the advantages built into American Cable TRU-LAY PREFORMED—at the mill. Just *one* of the reasons why TRU-LAY PREFORMED wire rope is preferred by so many operators. Specify it for your next line. It will steady your machine production; save you time, accidents, and money.

No wonder the Armed Forces took so much of our production!

AMERICAN CABLE DIVISION

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Portland, Tacoma

AMERICAN CHAIN & CABLE COMPANY, INC.

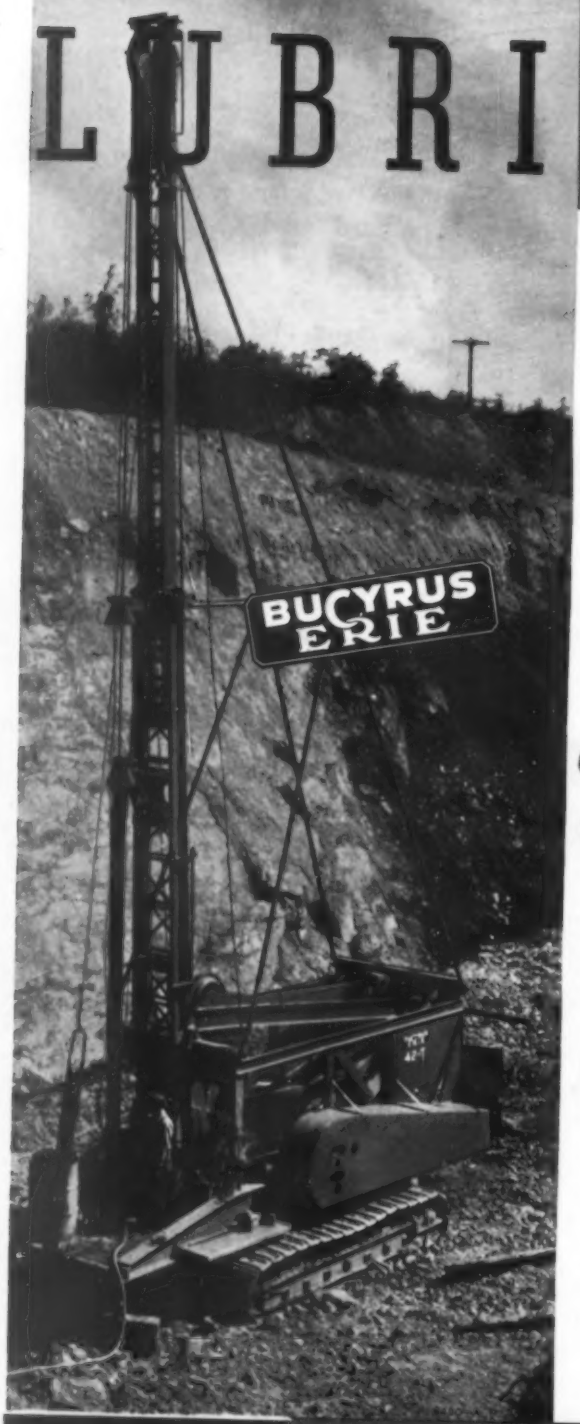
BRIDGEPORT, CONNECTICUT

ESSENTIAL PRODUCTS . . . TRU-LAY Aircraft, Automotive, and Industrial Controls, TRU-LOC Aircraft Terminals, AMERICAN CABLE Wire Rope, TRU-STOP Brakes, AMERICAN Chain, WEED Tire Chains, ACCO Malleable Castings, CAMPBELL Cutting Machines, FORD Hoists, Trolleys, HAZARD Wire Rope, Yacht Rigging, MANLEY Auto Service Equipment, OWEN Springs, PAGE Fence, Shaped Wire, Welding Wire, READING-PRATT & CADY Valves, READING Electric Steel Castings, WRIGHT Hoists, Cranes, Presses . . . *In Business for Your Safety*

Your Blast Hole Drill Needs

LUBRICATION

to last the duration!



You can do much to help your blast-hole drill endure the war years — while it's working its hardest and best — by lubricating it regularly. Be sure to follow carefully the complete lubrication instructions of your drill manufacturer, and you'll be well on your way to drilling as Uncle Sam likes it — at top speed for the duration.

Here Are Some Points to Watch:

1. Bearings on crown sheave and sand line sheave should be lubricated once each shift.
2. On modern machines lubricate ball or roller bearings on jackshaft and engine pulley shaft with small amounts about once each week. Don't use graphite grease. On older machines with plain bearings, lubricate daily.
3. If your machine is caterpillar-mounted, lubricate crawler fittings once each week, oftener when machine is propelling long distances. Even when your drill is not travelling, keep cats lubricated against wearing motion developed in drilling.
4. Keep wire lines lubricated with wire rope lubricant to prolong their life.
5. Be sure to lubricate spudding pinion and bull reel pinion once each shift.
6. Don't overlook sand reel shaft bearings and operating lever connections — they should be lubricated once each shift.
7. Get complete lubrication instructions from your drill manufacturer and follow them carefully.

Keep 'em Drilling

H-46

ARMY E NAVY

Bucyrus-Erie

SOUTH MILWAUKEE, WISCONSIN, U. S. A.